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A DISCUSSION OF THE TREATMENT OF MALARIA.*

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The object of this paper is: (1) to emphasize the importance of physicians curing the cases of malaria they treat, and (2) to specify proper treatment for this purpose.

1. Malaria constitutes a large part of the sickness in many localities in a vast area in the southern part of the United States. Every person who has malaria gets it from another person through the bites of mosquitoes as secondary hosts of the malaria parasite. Mosquitoes are not infected until they get infected by biting persons who have malaria parasites in their blood.

It frequently occurs that when a person is once infected he carries the infection for many months and sometimes even two or three years, having clinical relapses from time to time, and at other times is free from any recognized clinical symptoms. During all of this time, however, he is a malaria carrier and a potential source of infection to mosquitoes and through them to other persons. In extensive studies furnishing information on this particular point, it has been found that more than 50 per cent of all of the clinical attacks of malaria that occur are relapses and not new infections. It is, therefore, very apparent that if those who have clinical attacks were cured or disinfected so that they would not relapse, the incidence of malarial attacks would be very greatly reduced. Not only would this be so, but the number of malaria carriers from which new infections come would also be very greatly reduced.

Physicians treat only a portion of the clinical attacks of malaria that occur, the rest being treated either by home medication with quinin and patent medicines or receiving no treatment at all. No doubt the extent to which clinical malaria is treated by physicians varies greatly in different localities. The writer has had an opportunity of inquiring into this question rather carefully in a locality where malaria is very prevalent in the Mississippi delta, namely Bolivar and Sunflower Counties in Mississippi, and the information obtained indicates that approximately 20 per cent to 25 per cent of the malaria that occurs in that locality is treated by physicians. It seems reasonable to conclude, therefore, that if the physicians of this particular locality would cure all of the cases of malaria they treat, there would be a corresponding reduction of 20 per cent to 25 per cent both in the incidence of the disease and also in transmission, over what would occur if they cured none of their cases.

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It would be difficult and in fact impossible to ascertain just what proportion of the malaria cases treated by physicians are cured. By cure, I mean disinfection, so that relapse and transmission do not occur. All the experience and observation I have had leads me to believe a comparatively very small per cent of the cases treated by physicians are actually cured and that a very much larger per cent remain infected, to relapse and be sources of infection to others.

The physician is not entirely responsible for this condition. When called upon to treat a case of malaria, the chief purpose for which he is called is to relieve the clinical symptoms. The patient does not understand the nature of the disease and is little concerned about getting finally disinfected of the malaria parasites which are causing his clinical symptoms. Naturally, the physician is not so much interested in giving treatment and advice which the patient is not especially interested in. Therefore, after the clinical symptoms are relieved no advice as to the treatment necessary for final disinfection is given, or, if it is given, it is often given in such an unimpressive way that it is not carried out by the patient. Though I may be quite wrong in my estimate, I doubt very much whether even 10 per cent of physicians give such advice and treatment as is necessary to disinfect patients following clinical attacks of malaria.

One thing that has been responsible for the use of insufficient or improper treatment on the part of physicians is the lack of any standard method of treatment. If one wishes to learn the best method of treatment and consults the many different authorities on the subject in text-books or otherwise, he finds the greatest variety of methods of treatment recommended. Many of them are inadequate and many are harmful, producing so much discomfort to the patient as to defeat the purpose. Spectacular methods of treatment seem to appeal to many of the authorities and also appeal to physicians and to a certain extent to the patient. I refer especially to such methods as hypodermic or intravenous administration of quinin, administration of some of the widely advertised preparations of arsenic, etc. Though special methods of administering quinin may have a very limited place in the treatment of very rare cases of malaria, such spectacular methods as mentioned have been largely responsible for the neglect of much more appropriate and successful methods for all ordinary purposes.

2. *In discussing proper treatment of malaria*, it should be stated at the outset that there is only one specific remedy known for the disease and that is quinin. It is, however, one of the most perfect specifics in medicine. Barring extremely rare, moribund cases, any case of malaria can be cured by proper use of quinin. There are, so far as I have been able to observe, no exceptions. These results are not to be expected, however, from improper use of quinin any more than we would expect favorable results from improper employment of other specifics in medicine.

One of the questions that arises is what mode of administration is best. We have three to choose from—intravenous, intramuscular, and oral.

When quinin is given intravenously it reaches the blood stream at once and begins at once to accomplish whatever can be accomplished by killing malaria parasites in the circulating blood. Apart from the fact that it reaches the blood stream more quickly and in rare instances more certainly, intravenous administration has nothing to recommend it over administration by mouth.

Intravenous administration of any drug, even salt solution, is a formidable procedure requiring expert technical skill and always accompanied by a certain element of risk. Therefore, it should never be employed except in emergency justifying the risk. Intravenous administration of quinin for ordinary cases of malaria is most pernicious. Quinin administered intravenously is no more effective, dose for dose, than the same amount administered by mouth. Even if one dose administered in this way with the accompanying danger of harm was as effective as administration by mouth over a much longer period of time without any risk whatever, the intravenous method could hardly be justified in any but very exceptional cases. Its proper use is limited, therefore, to rare instances and then only until such time as oral administration can be depended upon.

Hypodermic or intramuscular administration of quinin should be mentioned only to be condemned. It is the least dependable method of the three and the only possible place for it in the treatment of malaria would be in cases where intravenous administration is indicated but for some reason cannot be carried out.

When quinin is injected into the tissues more or less damage of tissue results. The quinin is absorbed rapidly or slowly, but in many instances it is several days or weeks before it is all absorbed. Sometimes necrosis of tissue and abscess formation take place and the quinin is never absorbed. In other instances it may be absorbed much more rapidly. The uncertainty of absorption and the frequent local inflammation, necrosis and abscess formation leave little place for administration of quinin in this way.

There are those who believe they have seen results from hypodermic administration of quinin when administration by mouth had failed. As a matter of fact, such cases either were not malaria at all and the apparent results, therefore, not the effect of quinin or, as often occurs, the hypodermic of quinin was administered about the time the results of quinin administered by mouth appeared. It cannot be denied that quinin injected into the tissues may and will stop the clinical symptoms of malaria, but there is no experimental proof that a given amount of quinin administered in this way is more effective than the same amount administered by mouth.

Quinin given intravenously or injected into the tissues in the treatment of ordinary cases of malaria, which has been all too frequent during the past few years, is an example of the way in which we sometimes adopt and employ new and spectacular methods and remedies in medicine to the neglect of more effective and well established methods and remedies.

Administration of quinin by mouth is uniformly effective, not accompanied by any risk, it does not produce the damage and discomfort that frequently result from other methods and it does not require expert technical ability to carry it out. There is no more effective method of administration of quinin and it is to be preferred over all other methods, under all ordinary circumstances at least.

In giving quinin by mouth it may be given in capsule or tablet form, in suspension or in solution. Those who prescribe acid solution of quinin do so with the idea that it is more rapidly absorbed than when it is not in solution. Experimental evidence shows that such is not the case. However, even if it were true, it would be an objection instead of an advantage. What we need is slow continuous absorption and not rapid absorption. Slow absorption takes place, however, whether the quinin is given in solution or not. Acid solutions of quinin are extremely unpleasant to take, and though we may occasionally get patients to take it for a few days, it rarely will occur that a patient will take it long enough to get rid of his infection. Those who are in the habit of prescribing quinin in acid solution or who contemplate doing so in the future should try a few doses themselves. They will then be in better position to decide whether to prescribe it for their patients or not. The same thing could be said about those who give quinin hypodermically. They ought to try a few doses themselves and I am sure that they would be more likely to hesitate before giving it to patients unless the circumstances especially demand it.

So far as I know, there is no choice between tablets and capsules. Though there may be rare instances in which capsules or tablets are not quickly dissolved and absorbed, instances are certainly very rare.

The best suspension of quinin is the sulphate of quinin suspended in aromatic syrup of yerba santa prepared in such a way that one teaspoonful of the syrup contains the desired dose. This is especially suitable for administration to children.

The choice of a salt of quinin should also be considered. One author advocates one salt and another another. The chief salts, however, for oral administration are ordinary sulphate, bimuriate and bisulphate. The latter two salts are chosen because they are supposed to be more rapidly absorbed. During 1917 I had under

my observation an extensive experiment in which different salts of quinin were tried on those who had malaria in a group of approximately fifteen hundred convicts on a penitentiary farm. Only the three salts just mentioned were tried. Though the experiment was not conclusive, the evidence obtained indicated that none of the salts were superior to the ordinary sulphate and that possibly sulphate was the most effective. For purposes of simplicity and uniformity as well as effectiveness, the sulphate is to be preferred.

In determining the dose of quinin for the treatment of malaria, we wish to employ the minimum that will accomplish the desired result, both from the standpoint of economy and also the patient's comfort. Unnecessarily large doses are a waste of a useful drug, the supply of which is inadequate for present needs and also cause unnecessary discomfort to the patient. Though almost all persons can take sufficient quinin to control malaria, enormous doses produce much discomfort and may possibly do permanent harm.

The object of treatment is first to relieve the clinical symptoms. Thirty grains of quinin daily is quite as effective in relieving the clinical symptoms of malaria as any larger amount. The clinical symptoms stop in from one to three or possibly four days. In fact, twenty grains, or even ten grains, will also stop the active symptoms in most cases but not in all. Thirty grains daily is about the minimum amount that can be depended upon to be effective in practically all cases; therefore, this amount should not be varied from, except, perhaps, in rare instances. During an experience of several years spent largely in studying and observing malaria, I do not recall a single instance in which active clinical symptoms due to malaria continued as long as four days while the patient was taking as much as thirty grains of quinin daily. Though others may have observed exceptions, it must be admitted that they are so rare as to be negligible.

So far as the effect on the malaria is concerned, it is immaterial whether the daily amount of quinin is given in one dose or in several divided doses, but a single thirty-grain dose produces more discomfort to the patient than the same amount given through the twenty-four hours in divided doses. Ten grains every eight hours is almost ideal.

The second object of treatment is to cure or disinfect the patient to prevent relapse and also to prevent transmission of the infection to others. This is the part of the treatment which is so much neglected, the importance of which I wish to emphasize.

Almost all who treat malaria sooner or later get enough quinin in to relieve the clinical symptoms, but unfortunately the subsequent treatment is very frequently inadequate to destroy the infection. Daily administration of quinin is more effective than interrupted treatment for this purpose. Ten grains daily is about the minimum amount that can be depended upon. Smaller doses are less effective and larger doses are unnecessary. Since a larger amount is unnecessary, it is especially undesirable because of the unpleasant effect which is greater in persons who are up and about at their occupation than when they are in bed. It is likely to prevent continuation of the treatment for a sufficient period of time to accomplish the desired result.

Since the effect on the malaria of a given daily amount of quinin is as good when given in several divided doses, and since ten grains at one dose produces little unpleasant effect in most all persons, the single daily dose of ten grains is preferable. It is less trouble to take one than several doses daily.

The unpleasant effect is less when the patient is in bed than when he is up and about. Therefore, at night before retiring is the best time of day to take the quinin.

The length of time quinin must be continued is a question of vital importance. We have no way of determining when a patient has been disinfected. Absence of clinical symptoms and failure to find parasites in the blood do not prove that the patient is no longer infected. The only dependable indication of disinfection is the duration of treatment which is known to be effective.

There is great variation in the duration of treatment required to disinfect different persons. Some require only a few days, others a few weeks. Nevertheless, sufficient treatment will disinfect any person. In a very extensive experiment with which I have had the good fortune to be associated during the past four years, the evidence indicated that about 60 per cent to 70 per cent are disinfected by ten grains of quinin daily for a period of four weeks, and that about 90 per cent to 95 per cent are disinfected by eight weeks of treatment. It would probably take twelve weeks or possibly longer to disinfect 100 per cent. On account of the long treatment necessary to disinfect 100 per cent, and the small per cent disinfected by short treatment, it seems desirable to strike a middle ground of eight weeks for practical purposes, knowing that it falls a little short of perfect.

The national malaria committee of which the Surgeon General of the United States Public Health Service is Chairman, and Dr. H. R. Carter also of the Public Health Service is Secretary, has adopted and proposed a standard treatment of malaria. It is as follows:

"For the acute attack, ten grains of quinin sulphate by mouth three times a day for a period of at least three or four days, to be followed by ten grains every night before retiring for a period of eight weeks. For infected persons not having acute symptoms at the time, only the eight weeks treatment is required.

"The proportionate doses for children are: Under 1 year, one-half grain; 1 year, 1 grain; 2 years, 2 grains; 3 and 4 years, 3 grains; 5, 6, and 7 years, 4 grains; 8, 9 and 10 years, 6 grains; 11, 12, 13 and 14 years, 8 grains; 15 years or older, 10 grains."

This standard treatment is now being employed entirely and has been employed chiefly for nearly four years in the largest experiment in malaria control ever undertaken in the world. It has met every expectation and I wish to commend it to you. It is far better than the many varied, spectacular and inefficient methods in general use.

In conclusion, I wish to emphasize the fact that the possibility of rapid reduction in the prevalence of malaria in this or any other state rests in the hands of the physicians of the state. If each would cure all the cases of malaria he treats, malaria incidence would rapidly decline. An essential step toward this end for any physician or group of physicians to take, is to adopt and follow the standard treatment or other equally effective treatment.

DISCUSSION.

Dr. Jas. T. Riley, El Reno: Many of you heard Dr. Bass' paper on Malaria last evening. He will talk to us.

Dr. Bass: I did not want to take up any more of the time of this meeting. I appreciate very much the audience and reception I had last night. However, if there are any questions that arose from my paper last night, I would like to answer them. If there are any criticisms or suggestions, I would appreciate hearing them. I have been a student of malaria many years.

Dr. F. M. Sanger, Oklahoma City: Dr. Bass, do you standardize the treatment?

Dr. J. P. Cowman, Comanche: Do you use quinin in hemoglobinuric malaria?

Dr. J. T. Fulton, Atoka: I would like to ask the doctor as to his condemnation of indiscriminate use of quinin.

Dr. J. L. Mitchell, Vinita: I would like to ask how to detect the malaria from a number of other things.

Dr. J. T. Martin, Oklahoma City: I would like to ask the diagnosis of malaria when you have a negative sign with malarial symptoms.

Dr. L. J. Moorman, Oklahoma City: I would like for Dr. Bass to make clear the diagnostic value of quinin as a therapeutic agent.

Dr. T. H. Briggs, Atoka: I do not know whether Dr. Bass made mention of elimination before giving quinin. I would like to have his opinion as to the kind of elimination before quinin treatment.

Dr. Bass: I shall try to answer the several questions in the order they were asked, and of course it would not be proper to take up time to enter into an extended answer to all your questions.

The first question as to the desirability of a standardized method of treatment to the neglect of the individual. It must be appreciated that where we have not a specific in medicine, for instance in pneumonia, typhoid and many other diseases, the cause of which we do not know, it is not practical to employ a standardized method of treatment to the same extent as in this disease, where we have a certain specific. We have no method by which we can determine which patient will do better with a small dose, or another with a large dose, therefore it seems advisable to attempt standardization. Of course we regulate the doses with regard to age and size; at the same time individualism in the treatment of malaria is an error unless there is a special reason for varying from the standard, therefore I believe one of the important things to do in the treatment of malaria is to follow a standard method of treatment, which is better than promiscuous methods we employ.

The treatment of hemoglobinuric malaria is a question that is raised in nearly all discussions of malaria. There is a great difference of opinion. If we examine the blood we find malarial parasites in a great many patients. On the second or third day they have sufficient malarial parasites. They are not sufficient to produce any considerable harm. Therefore it would seem wise and proper to avoid the use of large doses of quinin during the stage when quinin is not demanded. Of course, as soon as the patient may safely take quinin, the proper thing is sufficient quinin to disinfect. You will recall the condemnation of the intravenous administering of quinin. What I said was that the promiscuous use of intravenous and hypodermic quinin was a pernicious practice. My objection is that intravenous administration of quinin is not one particle better than administration by mouth. Intravenous administration is a formidable procedure and one that we should resort to with caution. It requires expert technical skill and ability. If we want to control malaria, if we want to cure those who have it, we must, in a large per cent of the cases, make our treatment simple and practical, therefore there is no use for intravenous use of quinin. There is one instance in which the intravenous administration of quinin is a life saver, that is in comatose malaria. Whenever you have such cases give quinin intravenously, but just as soon as that state is passed and quinin can be given by mouth, then it should be given that way.

The question of the means of control, with which I am identified, I will state briefly. Where malaria prevails to any great extent, the disease may be controlled either by prevention or controlling the mosquito that carries malaria, or by getting rid of the malarial parasite. If there were no mosquitoes to pass it from man to man there would be no spread of malaria. On the other hand, if there were no malarial parasites for the mosquito to get, there would be no transmission of malaria. It has been demonstrated there would be no malaria if there were no mosquitoes. It is also possible to control malaria by disinfecting people who have malaria so there would be no parasite.

The question of diagnosing malaria when the smears are negative. The only way in the world to know a patient has malaria is to find malaria parasites in his blood. Our diagnosis on history is frequently correct. Those of you who are careful can make diagnosis on the history and clinical case. The only certain diagnosis is to find the malarial parasite in the blood. Therefore it is absolutely impossible to examine any person, physically, and by history often without blood examination and determine positively he has no malaria. If we fail to find parasites we can say positively he has not malaria. Otherwise we cannot. The blood examination cannot be depended on to eliminate the question of malaria. Whenever a person is having clinical attacks of malaria, or clinical symptoms of malaria,

there are enough parasites present that we can find them. It would be a surprise no doubt to many of you to know how many people have malaria in their blood who have not clinical symptoms.

The question of the diagnostic use of quinin. Of course, the proper way to diagnose malaria is to make examination for malarial parasites. That is by far the most dependable when the proper facilities are at hand to make the examination.

The final question as to the importance of elimination in treating malaria. The only specific remedy for malaria is quinin and it must be given always if we get specific results. It is more effective, the results are more easily accomplished whenever the alimentary canal is emptied. Therefore, a purgative and a reasonable diet are both good. Whenever the diagnosis of malaria is made we prescribe a purgative, which is usually calomel, also prescribe quinin to start when the purgative works off. Sometimes the patient waits a day before taking the quinin. The proper thing is to start the specific remedy at once. The time to start quinin is when we diagnose malaria, likewise the time to take the blood for examination is when we expect the patient to have malaria.

Dr. J. T. Martin, Oklahoma City: I move this section give a vote of thanks to Dr. Bass—Carried.

MALARIA.

Bruce Mayne, Memphis, Tenn. (*Journal A. M. A.*, Oct. 11, 1919), offers a formula for the treatment of chronic malaria which is commented on by H. R. Carter, Baltimore. He remarks on the difficulties of obtaining any standardized treatment, and the insufficiency of methods employed. Mayne says: "One must realize at the outset that the ideal formula must provide: (1) for the relief of the patient—the elimination of clinical symptoms; (2) for the destruction of the plasmodia in the peripheral circulation tending toward the prevention of the formation of sexual parasites; (3) for the prevention of the production of quinin-inaccessible parasites (so-called resistant or quinin-fast forms) and (4) for the effectual inhibition of the recurrence of clinical symptoms accompanying relapse with the reinvasion of asexual parasites." The course of treatment proposed covers 75 days and the administration of 800 grains of quinin bisulphate in a geometric progression consisting of four courses of 200 grains each. The plan is illustrated by a chart. Analyzed, it consists of 40 grains, daily for 5 days, given in four 10-grain doses. After this there should be no severe paroxysms, no chills, and only young rings and mature gametocytes in the blood. The patient should probably be out of bed after this, and apparently normal. Twenty grains given daily for ten days is the second course. The third course consists of 10 grains for twenty days, and Fowler's solution or other tonic may be prescribed if indicated. Only gametocytes should be now revealed by the microscope and the patient should be able to resume normal activities. The fourth course is of 5 grains each day for forty days with a tonic accompaniment if necessary. After this a continuance of treatment should be urged for two weeks or more, especially in the milder types. These courses are only practical with a patient under control, as in military service. In his remarks, Dr. Carter, assistant surgeon-general of the Public Health Service, says that the usual insufficient treatment is realized by physicians in the Mississippi Delta. The treatment is discontinued when the active symptoms disappear and the patient feels better, but the undermining of efficiency is incalculable. A standard method of treatment with heavy dosage in the beginning of an acute attack, and continuation after the disappearance of symptoms is, in Carter's judgment, the method to be followed. He would not advise general publication of the method because there may be other better ones, and it lacks the support of sufficient direct observation. While in agreement with the basic plan of the formula and in general agreement with its detail, he does not deem it advisable for the Public Health Service to go on record as indorsing it, until we have more absolute knowledge of its effects in comparison with other methods.

RABIES-HYDROPHOBIA.*

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History. Rabies is an ancient and wide spread disorder, which was first described by Aristotle in the Fourth Century, B. C. Practically all animals are susceptible but it is perpetuated among the lower animals, chiefly the dog family, 80 per cent to 90 per cent being dogs and wolves.

Etiology. It is probably caused by a living organism as yet not positively identified, which is transmitted from animal to animal by the inoculation of virulent saliva through the bite, invading the nervous system, rendering it virulent and inducing the symptoms.

Inoculation. The period of incubation varies from nine or ten days to eighteen months or two years, depending upon the bite, location and virulency, the majority averaging from two to three months. It is a well established fact that most every animal is capable of being infected and the animal that is best protected by hair and clothing is not so susceptible as the one that is not.

Influence. Age does not have any influence and a fact that should be remembered is that an animal may transmit the disease before any symptoms have appeared. Another thing we hear is that a rabid dog is afraid of water. This is not true, neither are they necessarily wild eyed and frothing at the mouth, nor do they always carry their tails between their legs, in fact one of the first things sometimes noticed is that the animal is more friendly and playful, thus leading one to doubt that it could be rabid.

Seasonal Prevalence. It has been our experience that the greater per cent of heads examined are positive in winter, although the number of heads examined is greater in the summer. It is more of a coincidence if the actual number of cases are more numerous in one season than another.

All symptoms, as well as the anatomical changes, show that this is a disease of the nervous system primarily. The disease is an infectious one and transmitted from a previous case of the disease as is proven by finding that the secretions of some of the glands, as well as all parts of the nervous system, when inoculated into an animal's brain, is capable of producing the disease. It is believed that when the virus is introduced into the body by a bite or other means it comes in contact with some of the torn nerve fibers and gradually extends to the central nervous system where it produces one of two types of the disease—the furious and the dumb or paralytic type.

It must be admitted that with the exception of the negri bodies, the microscopic anatomy of rabies offers nothing which is constant or characteristic, although we generally find some gross changes, as hemorrhages, congestion, and at times definite softening of the brain tissue. Negri bodies consist of sharply defined round or oval structures occurring within the nerve cells of the brain and cord, taking the stain in a manner very distinct from the cell structures and containing minute granules which stain differently from the rest of the body. They are practically always found in a case of rabies, being found earlier in Amon's horn in the dog.

When we speak of rabies virus we mean the virulent nervous substance of an animal that has had the disease. It comprises the specific cause of the disease and the media in which it is found. Of this we have two types, the street and fixed virus.

Street virus is the virulent nervous substance as found in the natural disease, while the fixed virus is that modified by passing the street virus through a long

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series of rabbits. This passage through the animal makes it more virulent until it causes the animal to develop the disease in a fixed period of time.

Influence. The incubation period is influenced by: First, the kind of animal affected. Second, the site of inoculation. Third, sex. Fourth, age. Fifth, severity of bite. Sixth, previous condition of patient, as alcoholism, syphilis, shock, etc. Seventh, treatment. All cases do not become immune, so develop the disease. These are the ones that generally develop the disease early, average time two or three months.

The Two Types in Man. First, furious type. The onset is usually rapid, the patient showing psychical changes very early, becoming anxious, melancholy and depressed with a sense of presentiment of harm. He often is very restless, cannot sleep. Or again, it may start with local numbness, tingling, itching, and pain in wound; sometimes the wound becomes red and tender; or again, the first symptom may be difficulty in swallowing, a feeling of constriction in fauces, or if the cord is first affected, it may start with a difficulty in walking and a slight rise in temperature.

The symptoms progress without delay after the onset; however, the forewarning symptoms may last several days, but usually only twenty-four hours to forty-eight hours.

The symptom hydrophobia is present in nearly all cases, due to the fact that when the patient undertakes to swallow water or other fluid it produces a spasm of the muscles of deglutition, which is very painful. This spasm does not seem to be brought on so easily by solid food. I have seen cases in which the spasm was so painful I did not have the nerve to ask the patient to try again to take either food or water. In the cases that I have personally observed, the outstanding feature was the restlessness, nervousness; they could not be made to stay in bed or out; they kept on the move all the time. Another thing that impressed me was the acuteness of mentality. The patient, if he be of good self-control, may keep these spasms off to some extent. This spasm affects not only the muscles of deglutition but also those of respiration and may be produced by a noise, jar, or draft of air. The reflexes are increased or exaggerated.

The disease usually progresses very rapidly. Remissions usually occur, causing one often to doubt their diagnosis. Another thing that was very noticeable in a youngster that we observed was the tendency to talk almost continually, and did so except when interrupted by a spasm.

There may be periods of severe excitement, the patient losing control of himself, tearing up furniture, etc.; however, there is seldom any tendency to harm other people. The patient may beg to be restrained so as not to injure any one.

Due to the irritation of the nervous system, sexual excitement accompanied by priapism may be present. The voice is hoarse and harsh due to dryness of throat and spasms.

The spasms or convulsions become more frequent and involve more and more of the body. The convulsions may be so severe as to rupture some of the muscles. Vomiting is usually very severe, often vomiting blood and bile.

Death may occur during a convulsion, but generally a condition of paralysis develops and causes death. The spasmodic seizures then become less frequent and severe and less easily provoked. The muscles become limp. The face loses its expression of tension, becomes smooth and expressionless, the jaw sags and the mouth hangs open. There may be an excess of saliva, causing it to dribble out of the corner of the mouth in large quantities. Other patients may not have this, but may show a hard dry tongue. The breathing finally becomes irregular, feeble, and finally the patient dies from respiratory paralysis.

The eye symptoms are: photophobia, nystagmus, and often strabismus. In the last stages the pupils are dilated.

The paralytic type in man may not be diagnosed early, because the symptoms

are less marked and less violent. The symptoms are more of those of the last stages of the excited form and are probably due to a large dose of virus which attacks the cord first instead of the brain. This type is usually slower in producing death, lasting seven or eight days, while the other form usually dies in from three to four days after onset.

Treatment. This paper was written with the purpose of bringing out the fact that a patient treated with the killed virus method has a greater immunity than the one treated by the original Pasteur method, which is twenty-one to twenty-five doses of cord dried over potassium hydroxid sticks at 20 deg. C., from one to fourteen days or from one to eight days. In carrying out the work of the killed virus method, we adopted a standard suspension of one to one hundred fresh rabic brain and cord in physiological salt solution made as follows: Taking one gram of brain and cord, adding one-half to one gram sharp clean sterile sand, grinding thoroughly, using the wedgewood mortar and pestle. After it is thoroughly ground, add, drop by drop, the salt solution until a smooth emulsion is obtained, then adding the salt solution in large quantities until the full amount is added, then filter through a No. 595 S. & S. filter paper. From this standard solution the minimum lethal dose was figured by injecting the rabbits by the intra-cranial method with one-half cc. of the varying dilution which was carried up to one to 30,000. However it was found that a dilution over one to 25,000 was not uniform in bringing down the rabbit, in fact in some instances the rabbit lived after having one-half cc. of one to 20,000 dilution. Having found our minimum lethal dose, the next step was to immunize a number of sets of rabbits (six each) by both the hygienic laboratory technique and the killed virus method.

The original Pasteur method can be found in any text book, so it will not be mentioned further than to say the animals given this form of treatment developed an immunity sufficient to overcome a dose intra-cranially of from 1.35 to 1.85 minimum lethal dose, averaging not over one and one-half minimum lethal dose.

The killed virus is prepared as follows: Take one gram each of cord and brain' grinding with the sharp sand and add, drop by drop, distilled water until you have a thick homogeneous suspension, then adding larger amounts until twenty-five cc. of distilled water are added, then add slowly twenty-five cc. of distilled water containing one gram of phenol crystals. This should be added, a small amount each time, then thoroughly mixed and the process repeated until the twenty-five cc. are added, for if added too fast you get a curdled-looking specimen instead of the smooth homogeneous emulsion as you should have. Place in incubator and keep there for twenty-four hours at 37 deg. C. This gives you a two per cent phenol dilution which will always kill the virus in less than twenty-four hours. At the end of twenty-four hours, bring the volume up to 200 cc. with sterile distilled water, which gives a final dilution of brain and cord one to one hundred, while the phenol is five-tenths of one per cent.

In carrying out the animal experimentation work, we used twenty-one to twenty-five two cc. doses, given intra-muscularly and intra-peritoneally. By this method we found that the immunity could be raised sufficiently so that the animal could in many instances be given from seven and one-half to eight minimum lethal doses intra-cranially and still survive. The interval between finishing treatment and testing for immunity varied from thirty days to four months.

After having proved to ourselves that the killed virus method gave higher immunity than the Pasteur method, we adopted it, using twenty-one to twenty-five doses of two to three cc. of the emulsion as prepared by the above method, injecting it subcutaneously in the loin region of the abdominal wall.

In addition to the treatment by the killed virus method, we thoroughly cauterize the wound with formaldehyde.

Cummings has shown that the dialyzed method was superior to the Hoges or Pasteur method, giving as much immunity with twelve doses as with twenty-one of the other. He used two methods, either direct dialysis or first killing with

formalin and then dialysing out the formaldehyde. This method is practically the same as the one we use except that we do not dialyse as we do not believe there is any advantage in this.

Since instituting this method of treatment we have treated 366 cases that were bitten by a definitely rabid dog, without a case of paralysis or death.

DISCUSSION.

Dr. Gayfree Ellison, Norman: I wish to make just two points on this paper which I think you will allow me. We have a lot of rabies, in fact we have more in Oklahoma than any other state in proportion to our population because we have a great dog population. We pay very little attention to our dogs, they run at large.

The diagnosis of rabies in the dog is very important because there is no use to question the people after they have rabies. To begin early enough to immunize them before they have rabies is usually left to the physician and he is asked whether the dog has rabies and whether the patient should be treated. You have to familiarize yourself with the symptoms of rabies in dogs, and I think one of the best things is not to kill the dog, but keep it under observation. Then as to collecting and shipping the specimen, you should have some kind of an idea, in order, as Dr. Terrell has said, to make it possible to search for the negri bodies. Most of the doctors think this is a chemical analysis. Dr. DeBarr can take up a stomach after a year and find out whether there is poison in it or not. Why couldn't you do that with rabies? It has to be a fresh tissue to be examined. It must be fresh. The brain must be taken out. Therefore sever the dog's head, put it in sawdust and ice and get it to the laboratory as quickly as possible so the laboratory people will have something to show whether there is rabies or not. If he gets a positive report, all good and well; if not, you must take into consideration all these things, that it may be too early, etc. The killed virus will immunize and immunize quickly. You know very well that you can immunize an individual by giving him a very small dose of living micro-organisms. Some can stand it and some cannot. It is exactly the same way in using living virus in hydrophobia, you may produce hydrophobia. You cannot do this with the killed virus. I would like to ask Dr. Terrell if the killed virus will keep for any definite time so it can be shipped?

I would like to make another point, that of immunizing people all over the country. I think the hospital is the proper place. Not in the woods, etc. The place to do a major operation is in a hospital, and I think the proper place to immunize for rabies is in a hospital, for in a hospital they know what they are doing. There are three things to consider: First, the virulence of the dog that bit the patient. Second, size of the bites. Third, how near they are to central nervous system.

A little child on the east side died after two injections of anti-rabic serum. The parents think it was the treatment that killed the child. It had been seven days since the child had been bitten and the bites were near the nervous center.

Dr. T. H. Briggs, Atoka: Somebody is making a big mistake in giving instructions about the time of treatment. We had one dog in Atoka that bit seven children in one day. I was told eight or ten days was soon enough to begin the treatment. It was nine days before I got the treatment. If these cases develop in ten days, why should men be instructed it is all right to wait ten days before treatment? I am sure this child is developing rabies and it did not have the first dose before nine days. That has been the impression, that eight or ten days is early enough to start. If it can develop in nine or ten days, why not begin treatment as early as possible?

Dr. J. P. Bartly, Duncan: This subject of rabies is a very important one and treatment of rabies should be begun early or it is practically of no avail. One thing I want to emphasize, that the so-called "dog days" in the latter part of sum-

mer are not the time in which we have more rabies. Rabies is prevalent throughout the year. Another point is that if a dog bites a person, it is of great importance not to have that dog killed. It should be tied up and kept under observation. The negri bodies found in the brain are not very large in the early days of rabies. If the dog is tied up and observed two or three weeks, and it is living at the end of that time, the probabilities are that the dog was not mad. If you have a dog run wild in a small town, the sheriff usually gets out and shoots it—usually shooting it through the head so a laboratory examination cannot be made. The history of the symptoms that the dog shows is very important. Usually we have a great deal of trouble getting that history. They have heard a good deal but do not know from observation.

Dr. C. W. Heitzman, Muskogee: The discussion relative to the symptoms of rabies in the dog is well taken. Given a house dog, one that has been characterized by his friendliness, then suddenly without any special reason he behaves extraordinarily; he secludes himself. By observation we find him eating strange things such as dish-rags, his own excreta, etc. Usually we can classify rabies into two kinds, the paralytic and the non-paralytic. In the paralytic form we find paralysis of the lower jaw, that is, the jaw drops down and the dog is unable to sieze things in his mouth. While in this form there is no special danger of the animal biting the human or other animals, yet there is danger of the saliva infecting abraded places of the skin. Therefore, this animal should be handled with care if he is handled at all.

The other form develops the nervous symptoms early and usually, if not always, the dog runs away from home. This dog can bite and does bite every form of life that comes in his way. Another symptom that we frequently overlook in the dog is a peculiar form of lameness, generally in the hinder extremities. A dog that has been perfectly well as far as we are able to judge, develops this peculiar kind of lameness without any apparent cause and the other symptoms follow rapidly.

While the cure of rabies is well enough to talk about and to perfect, yet we are overlooking the most important part of the subject—that is, the prevention. It seems that we are able at this stage in the world's history to restrict everything, even to a man's highballs; it would, therefore, seem at first blush that we should be able to restrict rabies. If the proper safeguards which are known to all of us, were thrown about the ownership of dogs, rabies would, like many other diseases, become a thing of the past, or at least be very rare, instead of being on the increase as we are led to believe by the numerous papers published and the different methods of cures advocated.

That rabies is preventable and can be banished from a country is true and we need only to cite the case of England where a case of rabies has not originated for years. Every Englishman is a lover of a good dog and there is no reason why those of us who also love good dogs, should not be able to enjoy this pleasure.

The proper legislation thoroughly enforced will wipe rabies out of any country.

Dr. J. S. Fulton, Atoka: I want to speak of the symptoms of rabies in a dog. I have made some observations, having had a few cases. I had one mad dog of my own. We have discovered that before an outbreak their disposition is different. For instance, my dog was suddenly ugly, wanted to fight every dog that passed. He was friendly to me but in a few minutes he would jump on a number of dogs. I had him chained. He got loose and killed two or three dogs. Several others developed rabies; a hog or two died that I saw him bite. Another thing, Mr. Chairman, I do not think these dogs bite the members of their own family. When the dog gets to that stage he gets out and leaves home and does not come back.

Dr. J. A. Roddy, Oklahoma City: It is well to remember the symptoms of rabies and look for them in case of any individual that is bitten. A rabid dog has infected saliva at least four days before he shows any symptoms whatever. So potentially every dog is a rabid dog until shown otherwise. Statistics have for

a long time shown that all bites of rabid animals taken together, not more than 25 per cent ever produced rabies in man. It depends on the nearness to the central nervous system. A single puncture wound is more less likely to result in fracture. Those cases that have the short duration are those that are lacerated on the face and hands. Before the immunization with fixed virus was attempted it was found that adequate, early cleansing of the wound reduced the cases of rabies. It is just as important as cleansing the area before an operation.

Dr. Terrell, closing: I just want to again emphasize the fact of putting up the dog. Recently we had a case of a young man, and when asked the history he said he did not know. We planted this dog's brain. About thirty days after we developed a nice case of rabies in this animal. This dog had bitten several others. I think every dog should be put up under observation for at least nine days. Another point was asked, how long killed virus would keep. If the virus is kept at a temperature of 30 deg. F., it can be kept five months.

MALARIA CONTROL.

"Malaria is recognized as one of the most serious of the disabling diseases of man," says Wickliffe Rose, New York (*Journal A. M. A.*, Nov. 8, 1919). In mild form it is world-wide in distribution, and in its malignant form belts the globe in a broad zone, including tropical and semitropical regions. There are few diseases, however, he says, that present so many vulnerable points of attack and which, perhaps, can be more definitely or certainly controlled. The great drawback to antimalarial measures is the cost. But recent demonstrations indicate that malaria control can be put within the reach of the average community. Rose reports experiments of four general types made in the field for ascertaining the degree of efficiency under given conditions, and the cost of malaria control by antimosquito measures by the screening of houses, by administration of immunizing quinin and by direct attack on the parastie in the blood of the human carrier. Measures of the first type were tested at Crossett, a lumber town of 2,129 inhabitants in Ashley County in southeastern Arkansas, about 12 miles north of the Louisiana line. Crossett lies in a level, low-lying region at the edge of the so-called "uplands." A large lumber corporation assisted in the antimosquito measures. The details of the work are given, and the same were undertaken at another town, Hamburg, under somewhat more difficult conditions. A further demonstration was made in 1918 in four Arkansas towns, and the results show the possibility of mosquito control and that it pays. Like tests of screening were made, also ofiimmunizing carriers, and immunizing doses generally, in other communities. The conclusions are that in an average town of 1,000 inhabitants or more, with a reasonably high infection rate, malaria control by antimosquito measures is economically favorable; in fact, a sound business investment. In heavily infected regions, where the cost of mosquito control would be prohibitive, the amount of malaria may be greatly reduced by screening, immunizing quinin or destroying the parasite in carriers, and justify the hope that with the systematic application of these measures the malaria can be held within reasonable bounds, within limits of cost that the average community can afford. It will be prepared to provide the funds when the results are shown and the continuation of demonstrations is advisable. The article is illustrated.

THE TONSIL AND INFECTION.

Certain studies of the tonsil in relation to infectious processes are the subject of a paper by D. J. Davis, Chicago (*Journal A. M. A.*, Jan. 31, 1920). An interesting point to start with is the distribution of lymphoid tissue which is specially accumulated in the palatine tonsils and in the ileocecal region. These accumulations seem to be a protective mechanism against pathogenic organisms, more against some than others, and it may break down entirely in some cases. Another point noticed as of importance is the surface area of the tonsils, which Davis has attempted to measure, and finds it roughly averages about 25 square cm. Another feature of significance is the distribution of plasma cells, which, generally speaking, indicate chronic inflammation or irritation, and therefore must be regarded as pathologic. Their time of appearance, distribution, tendencies, etc., were studied by Davis. He disputes the statement that the bacterial flora is abundant and varied, as he finds that not every germ that enters the tonsils will develop there. He sums up his conclusions from the study as follows: "In order to understand clearly the genesis of certain diseases, it is necessary to study intensively a suspected focus of infection, like the tonsil, in both normal and infected persons. Lymphoid structures attain two maxima of distribution; one in the throat and another in the region of the ileocecal valve and appendix; these maxima correspond in general to the normal distribution of bacteria in the alimentary canal. At these points also the greatest number of pathogenic micro-organisms attack the body. Plasma cells appear shortly after birth (therefore after infection) under the mucosa, and their presence probably indicates chronic absorption of infectious and other material. Certain organisms injected into the crypts of the tonsils disappear in a few days. The flora normally found in the tonsils is a restricted one. Actinomyces-like granules composed of fusiform bacilli, streptococci and spirochetes growing together appear as more or less normal inhabitants of the crypts. Here may be an important source of B. *fusiformis* in certain infections about the mouth caused by this organism. In the tonsil crypts, *Streptococcus hemolyticus* is almost constantly found. This focus is one source of these organisms in the throat and adjacent structures. This fact must be considered in making throat cultures and in a study of the problem of hemolytic streptococcus carriers."

THE RELATION OF THE TONSILS TO SYMPTOMATOLOGY AND OTHER CONDITIONS IN THE BODY.*

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In considering the relation of an organ to symptomatology and other conditions we may study it from several standpoints. 1. The effect of hyper- or hypo-production of internal secretions. 2. The role of the organ as a harboring place for bacteria with the absorptions of the toxic products of such bacteria and as a distribution point of bacteria to other parts of the body. 3. The effect of the lack of the function of this organ on the remainder of the organs that form the system to which the particular organ studied belongs.

If we approached the tonsils from these standpoints, we can almost eliminate the first one, for the reason that so far as is known the tonsils produce no internal secretions, although there are indications that they may. For example, the symptoms and conditions that accompany and follow hypertrophy of the pharyngeal lymphoid tissue can hardly be explained on the basis of the effect on the breathing alone. But up to the present time no attempt has been made to determine whether or not the tonsils produced an internal secretion, so for the purposes of this paper, that point will not be discussed. So far as the lack of function of pathological tonsils is concerned, there is sufficient lymphoid tissue in the body that the presence or absence of the tonsils would have as little effect as trimming the finger nails would on the general condition of the body, and we will have to wait until someone has established the function of the tonsils apart from that of the lymphoid tissue in general before we will be in a position to intelligently discuss their lack of function and the effect on the body. Therefore, we are confined to one line of investigation, namely, the relation of the bacteriology of the tonsils to other conditions in the body.

In taking up this study, the first thing to determine is the bacteriology of the tonsils. This subject has been studied from time to time by pathologists and bacteriologists with various ideas in view. Crowe, Watkins, and Rothholtz[1] studied the tonsils bacteriologically in 1,000 cases of tonsillectomy with the idea of ascertaining the after-effect of the tonsillectomy on the condition of the patient that suggested the tonsillectomy. Nichols and Bryan[2] studied the bacteriology of the tonsils with regard to the role of the tonsils in general ward infections. Pilot and Davis[3] studied the bacteriology of the tonsils from a laboratory standpoint. But none of these workers attempted to correlate the bacteriology and symptomatology in any given case or set of cases and their conclusions will be discussed in their proper place later in the paper.

Last year, studies were made in St. Anthony's laboratory to ascertain whether or not there was any demonstrable relation between the bacteriology and the pathology of the tonsils and conditions in other organs, or of the system as a whole.

Before taking up the discussion of the bacteriology of the tonsils, it may be well to remind you of the anatomy of the tonsils. The principal point in this consideration is the presence of the deep crypts in the tonsils that have no way of emptying themselves or of being emptied except by the formation of gas at the bottom of the crypts or in the massage incident to swallowing. Further, that these crypts are always filled with food particles and cell detritus and bacteria.

Rosenow, Nichols and Bryan, Pilot and Davis,[4] studied the bacteriology of the tonsils only with regard to the occurrence of streptococcus hemolyticus and they concluded that these organisms were present in the tonsils of about eighty per cent of all persons from five years up. Rosenow macerated the tonsils and

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studied the filtrate so there was no differentiation between surface contamination and that deeper in the organ. Nichols and Bryan studied the tonsils by surface swabs and material from the crypts. Pilot and Davis cut the tonsils open and collected material from the crypts. This method carried the surface contamination deeper so that there was no assurance that they really got at the crypt condition, and were it not for the confirmation of the work of others, their conclusions could not be taken as representing the real condition of the tonsillar crypts. However, the work of these investigators is mutually confirmatory and their conclusions that the tonsils are harbingers of streptococcus hemolyticus can be accepted. The further conclusion of Nichols and Bryan that "The tonsils are the principal foci of infection with streptococcus hemolyticus, and that excision of the tonsils is very important in keeping wards free from streptococcus infections," is valuable.

Crowe, Watkins and Rothholtz studied the tonsils with regard to all forms of bacteria, and while they do not give any exact figures as to the number of each kind that were found, they do give the percentages of the different pathological conditions in other parts of the body caused by different kinds of bacteria, for example they state that among colored patients the tonsils of 7.9 per cent were tubercular, and among white patients, four per cent were tubercular.

In our own series the bacteriology of the tonsils were studied by collecting material from the depth of the crypts by the aid of sterile platinum loop without in any way contaminating this material with the surface, and also the bacteriology of the centers of the tonsils was studied by cutting the sterilized surface and obtaining material from the depth of the organs. These studies were made on all tonsils without regard to the reason for the tonsillectomy and the relation, if any, between the bacteriology and the symptomatology was made by a study of the bacteriological results and the case histories. Further, we attempted to ascertain all forms that were present. Our results differ materially from those of other workers quoted above. We found the following organisms: Staphylococcus albus in all but one case. Staphylococcus aureus in three cases. Pneumococci in three cases. Bacillus influenza in one case. Gram positive bacilli in seventeen cases. Gram negative bacilli in nineteen cases. Tubercle bacilli and streptococci in no case. The absence of streptococci in our series and the overwhelming presence of this form in the reports of the other workers might be explained on the basis of difference in technique, and would seem to indicate that while streptococcus hemolyticus were almost constantly present on the surface and in the mouths of the crypts, they were absent from the depths of the crypts when the latter were not contaminated from the surface, or it may possibly be due to the difference in the environment of the cases in the different series.

One point that we attempted to make out that other workers have not reported, is the number of bacteria per unit of material from the tonsils. We found that the average number of bacteria per cubic millimeter was: crypts, 1,624,680, and centers 1,216,956. The maximum numbers were: crypts 4,176,000, and centers 3,712,000.

To sum up the bacteriology of the tonsils, we find that they are swarming with bacteria, that they are infested with all of the ordinary pathogenic bacteria and cocci, and that these bacteria are located not only on the surface, but more important still, in the depths of the crypts from which location they can easily be carried to other parts of the body and from which their toxins and metabolic products can be removed almost only by absorption into the blood.

As to the occurrence of conditions in the body that can be referred to the absorption of toxins, there were in our series neuritis and myositis in 34 per cent of the cases, and kidney disturbances in 13.8 per cent of the cases. With regard to the kidney disturbances, the above figures do not give all cases for the reason that kidney involvement may be quite extensive without giving any clinical manifestation unless this were specifically looked for, that is, the patient would not complain of symptoms.

As to the role of the tonsils as foci of infection from which bacteria are spread

to other parts of the body, our series contained the following conditions that could be directly traced to the tonsils or could have come from the tonsils: Throat lesions other than tonsillitis, 50 per cent of the cases. Infections of the ear, 33 per cent of the cases. Pyonephritis one case, and acute ulcerative appendicitis one case. In both of these cases the tonsils had been affected for a long time and showed a high bacterial content. If we add to these the findings of other workers, first, that the tonsils are the principal focus of infection of streptococcus, and second, that such conditions as diptheritic sore throat, acute arthritis, acute endocarditis, and focal infections due to hematogenous inoculation of various parts of the body, we must conclude that the tonsils are a very important source of general infection and that they thus play a very important role as a gateway to the body.

Just what the relation of the tonsils in tubercular infections is we do not at present know. The relatively low percentage of tubercular tonsils reported in the work of Crowe, Watkins and Rothholtz gives no indication of the frequency of infection by this bacillus through the tonsils for the reason that, as has been proven, the tubercle bacilli pass through the mucous membranes and are carried to other parts of the body without leaving any trail behind, so that it is safe to say that in all cases of tuberculosis with enlargement of the cervical lymph nodes, the bacilli have passed through the tonsils, and we know not how many more cases there are in which the infection has gone this route.

So we see that it can be definitely proven that both as a source of absorption of bacterial toxins, producing symptoms of a specific or systemic nature, and as a breeding ground for bacteria from which infection is spread to various parts of the body, the tonsils play a very important role and that a great many infectious conditions of other parts of the body can be traced to tonsillar infection.

Bibliography:

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2. Nichols and Bryan, Jour. of the A. M. A., V. 71, No. 22, pp. 1813 ff.
3. Pilot and Davis, Journal of Infectious Diseases, V. 24, 1919, pp. 386 ff.
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DISCUSSION.

Dr. Lea Riley, Oklahoma City: I have not had a chance to see Dr. Turley's paper, consequently I offer that as my apology. This is a paper, however, that is very much needed. We have been doing a great deal of tonsillectomy and work of that kind without the proper correlation of the symptoms and pathology. We note Dr. Turley has said there are three avenues of infection by way of the tonsils. In the first place they are peculiarly situated, furnishing moisture, air, etc. We found in the army so many cases of streptococcic infection of the tonsils. We found pneumococcus and different kinds of germs.

There are two ways that infection can take place from the tonsils. First: The material out of the tonsils being swallowed with the food. In this way it is mixed with the food and necessarily very materially changes the form of the food and makes a great deal of change in our diagnosis. We find that mixed with the food it will go into the intestines. We find lots of cases of digestive troubles that are relieved by removing this cess pool, as Dr. Hatchett said, this "den of iniquity."

Another source is that of inhaling these different germs. Pneumonia is a bronchial infection. It does not come from the blood. You can inject pneumonia germs in the blood and you will not have pneumonia. You will find that your blood feature is shown in lots of cases who do not have pneumonia. Our prognosis is often governed by the blood feature.

Dr. M. S. Gregory, Oklahoma City: I am very much pleased to hear this paper. We do not think so much about it until this comes home to us. A few weeks ago my eldest son showed focal infection. We removed the tonsils and for

three weeks there were no jokes passed around our house. That was pure streptococcus.

Dr. Turley: I want to thank Dr. Riley for bringing out one point and that was the matter of swallowing the material in the crypts. This material is swallowed sometimes and goes down with the food and a great many cases of appendicitis and streptococcus in some form, not altogether streptococcus, is the result. One other spread is by surface where they spread to the ear tubes. I think removing the tonsils at random, that is, cases of ear trouble, is rather a significant thing.

Dr. D. D. McHenry, Oklahoma City: I would like to ask, in those locations where you found a large number, were they in tonsils that were supposed to be infected, or that were supposed to be normal?

Dr. Turley: They were both. That is, some were supposed to be cases of acute tonsillitis, others not. We found this by studying all the tonsils. We measured them accurately in all cases; our conclusions were on that point that you couldn't tell anything about the conditions within the tonsils by looking in the throat, unless there was an inflamed area around them. We found high bacterial content, and changes within the tonsils which indicated rather intense inflammatory conditions wherein the surface of tonsils as you looked at them in the throat, the tonsils appeared small. Ages varied all the way from three to thirty-nine years.

Dr. L. H. Buxton, Oklahoma City: May I ask you if these tonsils examined were all supposed to have been diseased?

Dr. Turley: They were all tonsils that were enucleated, but they were removed for all sorts of reasons. One man had a pain in the left ischial tuberosity, the doctor removed the tonsils for him, they were removed for all causes, some of them removed in course of operation for other conditions.

Dr. W. E. Dixon, Oklahoma City: Might I ask you if any of the records show the following up of the results that were obtained from the patients, do you know?

Dr. Turley: Well, that is just the data that I wanted to present to this meeting that I haven't got, Doctor. I am just working on it and hope to report it in the Journal later. I have been after these men, and as I say, one of them who had a large percentage of the cases, handed me his report only last night, so am unable to give it to you.

Dr. E. S. Ferguson, Oklahoma City: Have you examined any one tonsil without finding bacteria?

Dr. Turley: Not one. The least number I found in any one, Sir, were hundreds of thousands. One, a very small pair of tonsils, had an office tonsillectomy when she was 29, her tonsils showed only ten thousand per cubic millimeter. You have to multiply that by ten for the centimeter.

Dr. W. T. Salmon, Oklahoma City: I would like to ask the doctor if he has ever made any examinations of membranes of the pharynx and buccal cavity?

Dr. Turley: No, we didn't make any. That is, except as a routine matter. We didn't in any of these cases.

Dr. Salmon: I just wondered if you had ever done that, and the amount of streptococci that might be found in the buccal and pharyngeal wall. That would be interesting to know.

Dr. Turley: No. These workers I quoted did. For instance, Ryan and his co-worker who were in the army hospitals, examined the naso-pharynx as well as the tonsils. Their results show that approximately 80 per cent of all streptococcus infections in the mouth and buccal cavity and that region near the tonsils were infected. We have studied cases of streptococcus involvement in which the naso-pharynx was sterile in which streptococcus was concerned and had very few bacteria of any kind; but personally I have never made a study of it.

Dr. A. L. Guthrie, Oklahoma City: I would like to ask the Doctor one question, about the debris in the crypts. Is there always pus when you have the debris, for instance, you squeeze a tonsil and you get a cheezy mass; is there always pus in that, or is that sometimes sterile?

Dr. Turley: It is never sterile, Doctor. But the condition is this; that in those crypts, that cheezy mass you get is composed of decayed food material, worn out epithelial cells and bacteria, largely. Now, if I had—if you have the complete record of this in which I take up all the pathology of the epithelial crypts and the surface, you would see how that comes about, but the majority of cases where you squeeze the tonsil and get the material from the crypts, it is not pus, but it is undigested food material and bacteria.

The reason it looks pussy in some cases and cheezy in others, is that an extra edema occurs which renders the mass more liquid than at other times; it means there is a flood of material; but actual pus in the tonsil, that is relatively rare. The material called pus is not pus, that is, according to the definition of pus.

Dr. R. O. Earley, Ardmore: I am extremely interested in this. It seems the methods of Dr. Turley and others have been entirely different. Last year at Camp Travis, for my own satisfaction, I took a series of fifty cases and run them, all surface smears. I found eighty per cent with the streptococcus hemolyticus, but I didn't go into the crypts. The Doctor finds it exactly opposite in the crypts. So that there doesn't seem to be much connection with the streptococcus hemolyticus and the crypts themselves. I am mighty glad to hear this paper.

Dr. Turley: What we did was to take a sterile platinum loop, take the material from the surface, throw that away, re-sterilize the needle, and then cut down in the material and get it. Then we would smear the surface of the tonsil before we made our incision, cut down and take the material in the crypts; we did not find streptococcus in any, although we looked for it in every case.

Dr. M. K. Thompson, Muskogee: In proportion to these troubles, this matter of bacteria and material you found in these tonsils in these crypts and so on—was the infection more magnified or worse where you found the higher amount of bacteria—was any record kept of that?

Dr. Turley: Yes.

Dr. Thompson: Did it show a greater amount of trouble from rheumatism, or more joint trouble, and such things as that, where you had the larger amount?

Dr. Turley: This is a condition. That statement cannot be made categorically, Doctor. Here is a patient with a tonsillar condition and rheumatic symptoms in which his tonsil, actually, bacteriologically and pathologically, wouldn't look as bad as some without those symptoms. The reason for that is, if you will study the pathology microscopically, of rheumatism, you will find fibrous and the hemorrhagic degeneration of the stroma which indicates that it has been undergoing changes for a long time, a rather intense inflammation, whereas in the other case the bacteria have gotten a sudden impulse and for a short time might have developed in greater numbers. This is what we did find in cases of rheumatism. We always found conditions indicating a long standing inflammation of the tonsils, that is, hypertrophy and degeneration of the stroma in these cases.

Dr. Thompson: What I was getting at was this: In making examinations, before removing tonsils, where you have had trouble in the joints, are we justified in removing the tonsils?

Dr. Turley: Yes.

Dr. Thompson: I mean, with the bacteriological examination?

Dr. Turley: Yes, or without it, either.

Dr. Thompson: Without it?

Dr. Turley: Yes.

Dr. L. A. Newton, Oklahoma City: Doctor, in practically all tonsils, in the crypts you find this bacteria?

Dr. Turley: Every one of them.

Dr. L. H. Buxton, Oklahoma City: I remember reading something on the application of this matter, and have been trying to think what man of Harvard Medical College it was who wrote a small work and devoted a considerable amount to the tonsils.

A Member: Farnam.

Dr. Buxton: He advanced a theory in reference to the physiology of the tonsil, stating the fact that the tonsillar ring develops at an early age, in infancy and early childhood, and then begins to decrease. He concludes that it is there for some purpose during youth and early childhood. The tonsillar ring, we know, begins to atrophy and is a fossil tonsil at fourteen or fifteen years of age, the pharyngeal tonsil earlier than that, at nine or ten years of age. He says this; that he believes it to be a laboratory for generating anti-toxins for the body of the child. In other words, in the tonsillar ring are generated anti-toxins, and of course, if that is true, and I see no reason why it might not be, he goes on to say that under those conditions only tonsils which are pathological, or are producing some pathological result, should be removed, that indiscriminate removal of tonsils is to be condemned, simply because of the fact that he considers the tonsils a physiological factor in early life.

Dr. Turley: I am very glad that Doctor Buxton brought out that point because I want to correct a misapprehension that is abroad with regard to tonsils. This atrophy of tonsils as a person gets older. Our patients ranged all the way from, I think it was either three or four years, to forty-one years, and perhaps with the exception of a number of terminal centers, I defy anybody to put those under the microscope and from the size of the section to tell whether one was four years old or forty. They don't atrophy and they don't disappear. The thing that makes it appear so is because the other tissues grow larger around them, but so far as the tonsillar tissue itself is concerned, they do not atrophy. You will find active terminal centers, we did, in tonsils of people forty and forty-five years old. I have seen them at St. Anthony's and in the series we ran. We did find degeneration of stroma in the tonsil of a boy seven years old, the youngest case in which we did find it.

Another thing, about anti-toxins: Just where anti-toxins are formed, nobody knows. The indications are, from the chemistry and the activity of these various cells, that anti-toxins are not formed by the white blood cells, any of them, so far as we know. The function of a tonsil is that of a lymphatic cell, and is rather of metabolism than of neutralization. Just to give you an illustration: the evidence is that the anti-bodies in cases of tetanus and diphtheria are manufactured by the cells of the central nervous system. So far as tetanus itself is concerned the action of the normal nervous system will act as an anti-toxin. It has been proved in animals without ever having had a previous inoculation. Whereas, you take the central nervous system of an animal like a crocodile, it doesn't. It is not susceptible and will not act that way. As I say, we don't know definitely where anybody has found any of them, except just indications here and there. Of course, we will agree with this man that the tonsils are there for some purpose, either present or past, that we may not need them at the present time. We don't know. It appeals to me more that the lymphatic tissue does have an internal secretion which at present we know nothing as to what it is, that the tonsils being one of the large collections of lymphatic tissue, will, of course, play a rather important part. We know, for instance, the thymus which has a lymphatic character, evidently produces an internal secretion. But I wish you all to get out of your heads that the tonsils atrophy and grow smaller as the patient grows older. We had one case in our experience, a woman whose tonsils were removed at 29 and who had good sized tonsils at 39, and they were removed a second time.

Dr. R. W. Dunlap, Tulsa: We would like to standardize the removal of tonsils, and I would like to ask the Doctor after his study, if there is any way of telling what tonsils ought to be removed and what not. Now, in my experience in the past, I have always squeezed out some of this cheezy matter, and if a patient comes in that has a large amount of that in the crypts, I have always believed they had a diseased mucous membrane in the crypt or the crypt would empty itself if it was healthy, because the ciliated mucous membrane, of course, is there to empty it; as soon as it fills up, I believe they are diseased. That has been my idea. Maybe I am wrong. Is there any way we can standardize this matter? Some do one thing from their ideas, and some another thing. Can we standardize or can you advise us from your study of these cases whether we should advise people to let their tonsils alone unless we have some definite distinct disease, like rheumatism, headaches or what not; shall we advise them to take them out, or let them alone?

Dr. Turley: Well, as I said a while ago, you can't tell anything about the pathology of the tonsils by looking at them in the throat, outside of an inflammation that is severe enough to cause a hyperemia of the region. You can't tell anything about the size of the tonsils as they appear in the throat. We had a case of removal wherein they were so large that the patient could hardly breathe during sleep. These tonsils, when the tissues relaxed, would almost flop back and close his naso-pharynx, and yet by actual measurement they wern't a bit larger than some that the history gives as submerged. These happened to grow out farther, that is, the back edge of them was nearer the surface.

The material squeezed out is an indication. If the material that you squeeze out is cheezy, all of it is cheezy. It means, we are not dealing at the present time with an acute edematous condition of the tonsil. If it is more liquid, it does mean that there is at the present time or is existing now an edematous condition which tends to liquefy the mass because of the exudate.

In the light of these studies, I am not laying this down as a law, because I would not attempt to do it on the number of the series, but from the studies I have made of the tonsils, I would say, unless there is some reason for removing them, let them alone. That is, if there are not symptoms that you can pretty definitely trace either to absorption of bacteria from the tonsils or an infection which is metastatic, suspected as coming from the tonsils, let them alone.

Dr. A. W. Roth, Tulsa: I would like to ask if your studies touched upon existence of any selective affinity with reference to the histories of the given cases?

Dr. Turley: What do you mean by selective affinity?

Dr. Roth: Some investigator, I forget just who, put forth the idea that in certain circumstances a given culture will have an affinity for certain tissues, and under certain other conditions it may have an affinity for a certain other class of tissues, histologically speaking, and therefore might be a thing that would have an effect in one class of cases and would not in another class of cases affect it any. Did you touch upon that?

Dr. Turley: From my bacteriological experience, I would say that this is very interesting if true. That a particular organism would have an affinity today for instance, for sub-cutaneous tissue, and tomorrow for something else; I never saw the slightest indication of that. I will not say that it is not true, understand, but I have never observed it.

LUNG ABSCESS AFTER TONSILLECTOMY.

Logan Glendening, Kansas City, Mo., maintains (*Journal A. M. A.*, April 3, 1920), that lung abscess is at present a frequent sequel to tonsillectomy. It occurs in all classes of cases—in private as well as free services. It is sometimes fatal, always serious and often very crippling. It is due in some cases to inspiration of infected material. Motor-driven anesthesia apparatus, by creating a positive pressure in the pharynx, may operate as a cause. At any rate, the danger is sufficiently great to justify the discontinuance of their employment until comparative data can be secured. It is due in some instances to metastatic infection through the lymphatics. Swabbing or tampering with the throat after enucleation has been accomplished is the cause of one group of cases.

SUMMER DIARRHEA.*

C. V. Rice, M. D.
MUSKOGEE, OKLAHOMA

Summer diarrhea is described by Finklestein and his followers under two headings: first, the mild or dyspepsia; second, the severe or intoxication, or as it is called by our American writers, gastroenteritis, ileocolitis, and cholera infantum. Finklestein made a clinical study of this condition and described the baby as extremely poisoned. Not that he isolated any toxins but, from the severe clinical symptoms, he called it intoxication. This severe form is caused by two main factors: (a) Improper food or some bacterial action on the food. (b) Bacterial infection.

Under the improper food, there may be a combination of the improper food elements or the infected food with a bacterial action on the fats and sugars, thereby forming toxic bodies. The bacterial type may be due to and divided into three main classes. First, the dysentery bacillus; second, the gas bacillus; third, the streptococcus, colon bacillus, and the bacillus pyocyameus.

It may seem strange but at Chicago, diarrhea is mostly due to some form of food disturbance, while at Boston, to one of the bacterial group. This is probably due to the fact that at Boston they have been advocators of raw milk feeding, while at Chicago they use the boiled milk. The non-boiling will, no doubt, explain the infectious type.

At this time we will take up the infectious form and will leave the type due to improper feeding until the last, as it is most common in this country, and we will go more into detail with the treatment. The prognosis of the infectious type should be considered very serious from the start and we must expect death in the majority of our cases. However, knowing that a few recover, we should keep these few in mind as a stimulus, hoping that our little patient may be one of the few. The pathological lesions are usually limited to the large intestine and to the last two or three feet of the small intestine. There may be only simple inflammation or there may be a mild, or a deep ulceration of the solitary follicles and the Peyer's patches. Mucus and blood soon appear in the stools and after a day or two they are composed entirely of it. Pain in the abdomen and tenesmus appear early. The temperature is a constant one and lasts throughout the active stage, having no intermission or remission. The temperature and symptoms do not respond to the starvation diet but run a more typhoidal course. So much so that some authorities claim that it should be treated along the same plan.

In making a diagnosis, it is not only necessary to make a differential diagnosis from the food intoxication, but also from the type of micro-organism that is the exciting cause. With the food intoxication, a starving period of twelve to twenty-four hours, with plenty of fluids will bring the temperature down to normal and if the proper treatment is instituted from here, there will not be a secondary rise. If the diet is not considered, there will be a rise which is termed "Paradoxical reaction of Finklestein." With the infectious diarrhea, there is no change in the temperature following the starving period and this should put us on our guard. The symptoms give us no bearing whatever as to the type of organism. With the exception of the stool of a peculiar green color, caused by the bacillus pyocyameus, the character does not enlighten us any. By the addition of a few drops of nitric acid to this stool the green color will disappear, but if it is due to bile we will get the characteristic color of Gimelen's test with nitric acid. If the streptococci are the exciting cause, they can be found in large numbers by the microscope. There is no simple practical test for the bacillus dysentery and a well equipped laboratory is quite necessary for its determination, however, we can make a probable diagnosis by the finding and excluding of other organisms. On the other hand, the technic for determining gas bacillus is quite simple and can be carried out by any practitioner in any place. A small portion of the stool is added to a

*Read before McIntosh County Medical Society, at Checotah, July 6, 1920.

test-tube of milk and this is placed in a water-bath where it is brought to a boil and is held for three minutes. All of the bacteria that are not in the stage of spores are killed, while the gas bacillus are not killed by the boiling as they are sporogenous. The test-tube is incubated at body temperature from eighteen to twenty-four hours. The man who does not own an incubator may carry the test-tube with him in his inside vest pocket. If gas bacillus is the exciting cause, 80 per cent of the casein is dissolved and the remaining casein is pinkish in color, filled with holes and has the odor of rancid butter. A few gas bacillus do not indicate that they are the cause of the disease. We should make every effort to find the exciting organism, as the plan of treatment in infectious diarrhea depends upon the type present.

If we see the case early—that is, in the first ten or twelve hours, we put our patient on a starving diet for twelve to twenty-four hours, giving plenty of water or a weak tea solution. To encourage the baby to take more of the fluid, we may add saccharin, one grain to the quart. Castor oil is given at this time and the lower bowel is irrigated with a normal saline solution. The fever is taken care of by cool sponging, and if the fever and general condition are not improved within twenty-four hours under this plan of treatment, we can exclude food intoxication and think of infectious diarrhea.

We should now start our investigation, as the success of our treatment depends upon the type of organism involved. The dysentery bacillus, the colon bacillus, and the streptococcus are classified as facultative bacteria. They thrive on either carbohydrates or proteins but produce harmless products from carbohydrates and toxic products from protein. Therefore, when we have a dysentery due to the facultative type, carbohydrates should be the important diet. Lactose is the best, as it is more slowly broken down, more slowly absorbed and is a carbohydrate medium in the intestine for a longer time than the other sugars. Lactic acid is formed from milk sugar and this is quite important, as it has an inhibitory action on the growth of dysentery bacillus. After twenty-four hours of lactose diet, it is well to add barley water for another twenty-four hours. Protein in the form of casein must be added to the diet as soon as there is any sign of improvement, as this overcomes protein waste. Drugs are used to handle the various symptoms and for that purpose only.

The more common forms of diarrhea are due to improper diet. The dyspeptic baby is not a sick patient but one who is fretful, pale, underweight, skin is flabby, and he may have eight or ten green, watery, mucus stools a day. He may or may not have a temperature, he vomits several times a day, has colic, his consciousness is not disturbed and he responds to dietary treatment very readily. It is seldom necessary to have him on a starving diet longer than six hours and if he is under two months old, he should have human milk. Even with human milk it is necessary to start the feeding with diluted and restricted amounts. Babies older than two months may do well on artificial diet, but we must be very careful in this or our simple dyspeptic will terminate into one of intoxication or decomposition. An older baby may be on a starvation diet with plenty of fluids for twelve hours and on the second day have a boiled mixture of one-third whole milk and two-thirds water with no sugar. We cautiously add 1 per cent of dextrin-maltose, which is less fermentable, and gradually increase to 5 per cent. About every second day we add three ounces of milk to the total until we have reached the maximum. In this we allow the baby's improvement and weight curve to be our guide. The baby will have an extreme toxic condition if the mild form has not had the proper food consideration. This happens if we have given it a high whey mixture or milk rich in fermentable carbohydrates, which increases the acid formation, and in this acid medium, bacteria flourish. They attack the fat and produce severe irritants to the intestinal wall, allowing undigested food to pass the membrane into the body, which causes the severe form of food disturbance (intoxication), with its multitude of clinical symptoms.

These symptoms are a high fever—104 to 106, disturbed consciousness, convulsions, strabismus, rapid loss in weight which is due to the loss of water from the tissue, and a cerebral cry which may suggest meningitis. The skin is dry and inelastic, the stools are frequent, liquid and mucus, and may contain blood; tenes-

mus is generally present, giving the child more or less pain and vomiting is frequent. The face has a fixed expression, the baby lies in one position with more or less nervous symptoms, and the breathing is deep, rapid and without pause. This type of breathing, with dark red lips and a deep stupor, are signs of acidosis. Sclerema may be present, which is due to the coagulation of tissue fluid of unknown nature. The prognosis is bad, and if the baby is saved it will be due to the use of human milk, starting with a weak mixture. Due to the toxic condition, the heart action is weak and the pulse small and irregular. Collapse is often seen and the skin is gray hue, the eyes are sunken and the face has a pinched expression. This calls for an active stimulation, such as a hot mustard bath, two or three minims of adrenalin, hypodermatically repeated every two or three hours, which can be followed by brandy fifteen drops every three hours and caffein sodium benzoate one-quarter grain every three hours. The urine is small in amount and contains albumen cast and sugar. The kind of sugar in the food is the kind that appears in the urine. Leukocytes are present up to 30,000. There is one thing to remember, and it is that we are not only dealing with a local bowel condition but also with one of a general toxic condition and it is that which kills.

In treating intoxication, we first put our patient on a starving diet for twenty-four hours, giving plenty of water or weak tea to which is added one grain of saccharin to the quart to encourage the intake of the fluid. Do not give a laxative unless the trouble is due to corn, cucumbers or watermelon and then give one dose of oil, followed by a colonic flushing. One dose of oil is all that is necessary, as purgatives are irritating to the bowel and what we need is not more action but more rest. Further purgation increases the loss of salts and water from the body and increases the tendency to the development of acidosis, which is the cause of many of our deaths in these cases. The muscular coats become fatigued from the over-activity of the bowel and we get loss of tone, resulting in distention. Calomel should not be given for an antiseptic action on the bowel, as there is no drug that will make the intestine sterile. It is too irritating at this time and causes blood to appear in the stools. This is one condition where the diet is the important factor necessary to bring about a cure and the drugs are used only to combat the symptoms. Sodium bromid is used as a sedative, paregoric when the diarrhea remains uncontrolled by other methods, and adrenalin, caffein, sodium benzoate, and brandy when we need a stimulant.

Human milk is a life saver with many of our cases. After the first twenty-four hours we must give one-half ounce doses ten times a day, keeping up the fluids of the first day. The next day, increase two-thirds ounce, then one ounce, and then to one and a half ounces. Here we wait and watch the reaction and our weight curve. If it straightens out and the diarrhea improves, we increase with caution, but if there is a decline of the weight curve and the diarrhea has not improved, we hold the diet at one and a half ounces with ten feedings per day. If one cannot obtain breast milk, the next best diet is albumen milk. Due to the fact that it is hard to make in the homes, I have been using diluted skim milk and at this time I am getting better results with the Larosan milk, which is claimed to be in composition, therapeutic properties identical to the standard albumen milk. This should also be used in a small amount at the start, gradually increasing and not forgetting to add sugar in the form of dextrin-maltose.

In conclusion, I wish to emphasize the following points:

1. Do not forget your starving period.
3. Do not forget that the bowels are over working and do not need calomel nor castor oil.
3. If the temperature is not normal and the condition is not improved after twenty-four hours of starving, think of infectious diarrhea.
4. Remember the small doses of food at the start.
5. Think also of the general condition as well as the bowels. Do not starve your baby to death waiting for the bowels to clear up.
6. Remember that the ideal diet is high protein, low whey and non-fementable carbohydrates.

PROCEEDINGS OF OKLAHOMA CITY CLINIC ROUND TABLE, WESLEY HOSPITAL

Dr. Mraz. *Case of Pyelonephritis.*

Mrs. J. P. S., age 38, admitted to hospital June 12, 1920. Family History: Negative except that patient nursed one sister who died of tuberculosis 18 years ago. Personal History: Nothing of importance.

Present Illness: Began in November, 1919, following a fall upon buttock. Since that time patient has had a "sore spot" in lower right abdomen and states that side puffs up at times. A week ago Monday she began having sharp cutting pain in bladder region with passage of large amounts of cloudy urine streaked with blood. Pain then shifted to right lumbar region. Had irregular fever running to 103. Patient has difficulty in controlling urine.

Physical Examination: Negative except for extreme sensitiveness to pressure over bladder region and right renal region, also in appendiceal region and along right ureter.

Cystoscopy: Bladder capacity 200 cc. Bladder mucosa looks normal except for some edema of right ureteral orifice and trigone. Ureters catheterized—no obstruction encountered.

P. S. P. Test: Left, five minutes. Right, four and a half minutes. Patient to x-ray room with catheters in situ. Right renal pelvis injected with 16 c.c. of sodium bromid and pyelogram made.

Urinalysis: Mixed catheterized specimen shows large amount albumen and gross number pus cells. Segregated, left negative. Right, few pus cells. Culture, shows growth of staphylococci in mixed and right kidney urine.

The interesting point in this case of pyelonephritis is the ease with which it might have been confused with acute appendicitis. The patient had had recurrent attacks of right-sided pain associated with bladder symptoms. Bladder symptoms are not rare in appendicitis where the appendix lies adjacent to the ureter causing a secondary ureteritis.

Dr. Stout was called to see the patient and found her with fever, nausea, right-sided pain, rigidity, and bladder symptoms. In other words, it gave a picture of acute appendicitis with bladder symptoms added. The question of operation arose immediately for the symptoms were acute. A urine analysis was made and the urine found loaded with pus. After carefully weighing the symptoms and in view of the urinary findings a conservative course was determined upon. The patient was placed on urotropin in large doses and the urine acidified with sodium acid phosphate. The temperature promptly dropped. The cystoscopy then cinched the diagnosis of pyelonephritis, probably secondary to a cystitis.

Dr. W. W. Rucks. *Case of Streptococcic Septicemia.*

We have in the hospital a boy 12 years old suffering from septicemia, who up to the present has run a very interesting course.

His history is that of a strong healthy child of good parentage and good environment, with no previous illness that would have any bearing on the present illness, which began about two weeks prior to his admittance to Wesley Hospital on June 11, 1920, with pain in the right shoulder and with fever, irregular chills and sweating. The temperature goes at times as high as 104. He was vaccinated three weeks prior to the beginning of this attack.

At the time of his admission a thorough general physical examination was not made, because of the great pain he was suffering in the region of his right shoulder which was swollen and very painful, especially about the right clavicle and the right axillary space. X-ray did not reveal any bony change eliminating osteomyelitis. Septic cellulitis was thought of and the swelling incised. No pus was found. The

wound was closed with drainage, the boy put to bed with hot antiseptic packs and salicylate of soda in 10-grain doses every three hours by mouth. No endocarditis was present at that time and none has developed up to the present time. His white blood count at the time of his admission was 20,000.

He was given 20 cc. of anti-streptococcic serum with 50 c.c of a ten per cent solution of glucose in the vein. By June 27th, the cellulitis had much improved. Temperature was near normal and his general condition seemed better, when he had a hard chill and temperature up to 105. Severe pain developed in the left chest, and loud friction rales were heard over the lower lobe of the left lung. This pleuritis began to subside after four or five days when on July 2 temperature came up high again following a chill and severe pain developed in the right chest and physical examination revealed a pneumonic involvement of the lower lobe of right lung. Severe toxic symptoms followed. Meningismus, restlessness, and failing heart. Digitalis, bromides and codein were used freely, with again a general improvement and at the present time if no new implantations occur, there is hope of this child's recovery.

The symptoms complex is that of a severe constitutional disease. In many cases the general symptoms are simply those of an intense infected process without definite signs of visceral or other localization. In other cases, as in this boy, we have added to the general picture localized involvement, first a cellulitis, then a pleuritis followed by a pneumonitis. The infecting organism is undoubtedly the streptococcus, though no positive blood culture was obtained. The portal of entrance might have been through the vaccination sore on his left shoulder, though this cannot be proven. The prognosis in these cases is very grave and should be given very guardedly.

Dr. A. L. Blesh. *Intestinal Obstruction, Complete, Acute, Mechanical.*

Patient, female, aged 48. Operated upon in February, 1917. Complete supra-vaginal hysterectomy, appendectomy. Health had remained exceptionally good except for an increasing tendency to constipation the last few years.

June 4, 1920, began having paroxysmal abdominal pain for which cathartics were taken. With the liquid stools and passage of flatus following the taking of the cathartic, temporary relief was obtained.

The pain associated with vomiting recurred 65 hours before entering hospital. From this time on obstruction complete. Fecal vomiting occurred 24 hours before entering hospital. Entered hospital June 10, 1920, in apparently surprisingly good condition considering the history. Temperature normal. Pulse 88. Abdomen greatly distended.

Operation immediate and eight inches of terminal ileum found imbedded in dense adhesions. Short circuit with lateral anastomosis to transverse colon made. Condition of patient following operation excellent.

Gradual increasing toxemia came on which deepened to death, which occurred June 13, 1920.

Point to be made is that in an old obstruction, anastomosis *should not be immediate*. This pours the poisonous intestinal contents into the thirsty bowel below where rapid absorption with overwhelming poisoning takes place. Bowel should have been drained *externally* and a two-stage operation done.

Dr. Paulus. *Case of Brain Tumor.*

Farmer, male, age 26. Married.

Family History: Father living and well at 54. Mother died of "hemorrhage of bowel." Maternal grandfather died of carcinoma of stomach. No tuberculosis in family. No history of neurosis in family.

Personal History: Had usual diseases of childhood with good recoveries so far as father knows. Never had convulsions. Entered military service October

19, 1917. Was slightly gassed while in France. Discharged June 18, 1919. While in army was in hospital for about three months in spring of 1919 on account of "fainting attacks," never lost consciousness. No history of injury to skull at any time.

Present Complaint: Had first real attack October 7, 1919. Father and wife state that patient had slight twitching of face, first followed by unconsciousness and generalized convulsions. Never foamed at mouth. Has had repeated attacks since from once a month at first to every two weeks now. No aura, except perhaps slight twitching of facial muscles. Attack of unconsciousness is followed by tired feeling and deep sleep. Thinks vision is not as good as formerly. For past several weeks has had slight frontal and occipital headache.

Physical Examination: Eyes—Pupils equal and regular. Both react to light, although slight sluggishness present. React to accommodation. Sclera clear. Tonsils submerged. Post cervical glands slightly enlarged. Reflexes all present. Patellar brisk. Slight paresis left side of face. Ataxia mild. Romberg positive. Motor muscles. Eyes O. K.

Laboratory: Urine—Specific gravity 10.25. Entirely negative. Blood, Wassermann, negative.

June 29, 1920. Spinal fluid cell count 3. Globulin negative. Wassermann 1 cc. and 1-3 cc. negative. Gold chlorid negative. Fluid rendering considerable pressure. 35 cc. removed.

Second. July 10, 1920. Spinal puncture. Fluid under normal pressure.

Progress of Case: Two days after entrance patient began to complain of intense headache, frontal and occipital, continuing day and night, not relieved by asperin or phenacetin. Bromides and chloral hydrates were given to procure necessary rest with only partial success. After three days patient was then put on K. I. Patient vomited several times on sixth and seventh day after entering hospital.

An x-ray examination of skull was made and the sella turcica found normal. No erosion of skull bones. Dr. Macdonald examined his eye grounds and I will let him report his findings.

Dr. Macdonald: His pupils are equal and regular, and both react to light. His vision is V. O. D. 10-30 and V. O. S. 10-30. Fundi examination shows both discs to be swollen and the outlines of discs obliterated.

Dr. Paulus: I believe we are dealing with an increased intra-cranial tension in this case—probably due to a brain tumor. The localization of this tumor is still a question. But we shall watch for further evidences and report our findings at the next meeting. I think this is a very similar case to the one we demonstrated about four months ago.

MOSQUITO CONTROL.

New Jersey's work in mosquito control is described by W. E. Darnall, Atlantic City, N. J. (*Journal A. M. A.*, Sept. 6, 1919). New Jersey has had an unenviable notoriety because of its mosquitoes, but conditions are no worse there than in other seaboard states bordered by extensive salt marshes. The pioneer in the scientific study of mosquito control was the late Dr. John B. Smith, State Entomologist, whose work caused the most perfect organization against the pest, anywhere in the world. Darnall describes the success of the work in the neighborhood of Camp Merritt, an embarkation camp to which the government was enabled to send millions of soldiers without the development of a single case of malaria. Of the forty different species of mosquitoes in New Jersey, practically the only ones of economic importance are the house mosquito and the malarial anopheles group. The real problem is to rid the state of *Aedes sollicitans* which at times makes life miserable for nearly half the population by reason of its long flights from the sea coast. About 16,000,000 ft. of 10 by 30 inch ditching (about one-third of it in the County of Atlantic) have been cut in the salt marshes, of which there are about 296,000 acres in the State—about one-half the work that needs to be done. In the next five years the rest of the marsh lands will be drained, and then New Jersey will be able to say that the mosquito pest is conquered. The per capita cost to the population protected, thus far, is about 15 cents. After the work is done the maintenance of it is of supreme importance, and the annual cost of this has been estimated as averaging about thirty-five cents per acre. The organization of the county units for this purpose is described. With intelligent co-operation and intensive study of the subject to meet the engineering problems, the drainage in many communities, it is thought, can be done with comparatively small expenditure. The article is illustrated.

PROCEEDINGS OF THE ST. ANTHONY CLINICAL SOCIETY.

Dr. Curtis R. Day, President. Dr. J. F. Kuhn, Secretary.
Oklahoma City.

DEATH REPORTS.

Dr. R. S. McCabe. *Lobar Pneumonia. Carcinoma of Stomach. Encephalitis Lethargica.*

Mr. G. A., laborer, age 73, white. Entered hospital April 18, 1920. Complaint: 1. Pain in left inguinal and lumbar regions, the latter radiating to the right shoulder. 2. Cough. 3. General weakness.

Past History: Negative.

Physical Examination: Fairly well nourished male, somewhat depressed. Skin dark brown and dry. Pupils irregular and very sluggish to react to light. Tongue coated dark brown. Pyorrhea. Right cervical lymph nodes prominent. Dulness in interscapular regions and over base of right lung, posteriorly, with fine moist rales. Heart slightly enlarged, and mitral regurgitant murmur. Palpable, hard, fixed tumor mass in region of pylorus. Temperature 102 F. Pulse 100. Laboratory Findings: Blood: W. B. C. 11,500, polys 85, lymphs 12, other cells 3. Other findings negative, including blood and spinal fluid Wassermann.

Progress: Diagnosis of lobar pneumonia and carcinoma of stomach made; patient put to bed; sodium bicarbonate drip and digitalis given. On April 20th temperature fell by crisis; cerebral symptoms appeared. Spinal puncture showed increased pressure. Symptoms cleared. April 24th patient restless and excitable; pupils more sluggish; Kernig's sign positive; delirious. Chest signs clear; abdominal condition produced no symptoms. Rise in temperature; spinal puncture done; increased pressure with cell count of 3.78 per cu. mm. Lymphocytes predominated; culture negative. Diagnosis of encephalitis lethargica. Patient grew weaker; died May 16, 1920.

Post-Mortem Findings: 1. Congestion of meningeal and cerebral vessels. 2. Increased viscidity of cerebro-spinal fluid. 3. Cysts of softening and acute toxic degeneration of the optic thalami. 4. Adeno-carcinoma of stomach with metastases in liver and abdominal lymph nodes.

Dr. John W. Riley. *Cancer of Rectum. General Peritonitis.*

Mr. C. W. L. S., age 54, white. Present illness: 1. Marked loss of weight. 2. Feeling of exhaustion. 3. Sacral pain. 4. Bloody, foul smelling stools. 5. Constipation.

Past History: About five years ago began to have frequent, blood-tinged, foul smelling stools. Loss of weight. Amoebae histolyticae were demonstrated in the stool. The rectal and recto-sigmoid mucous membrane was ecchymotic. The x-ray findings and Wassermann reaction were negative.

Physical Examination: Pale, poorly nourished male; nails cyanotic; skin muddy color. Pulse 72. Blood pressure 124-78. Temperature 98.6 F. Mucous membranes pale. Tongue coated and moist. Chest negative. Abdomen slightly distended; no visible peristalsis; no palpable mass. A nearly occluding, firm mass 5 cm. from anus, giving rise to great pain.

Diagnosis: Cancer of rectum.

Treatment and Progress: A three stage operation with transfusion of blood planned.

May 10th—Transfusion of 500 cc. blood.

May 11th—Laparotomy—lower right rectus incision. Well fixed tumor mass, size of fist, found in pelvis at level of recto-vesical fold. Lymph nodes not demonstrably involved. Ascending colon anchored to incision preparatory to right colostomy.

May 14th—Right colostomy instituted.

May 18th—Transfusion of 500 cc. blood.

May 20th—Laparotomy—lower left rectus incision. Sigmoid mobilized and divided with clamp and electric cautery. Both ends invaginated and sutured. The distal portion, containing tumor, mobilized from sacrum and bladder and covered with peritoneal flaps previously formed. Proximal portion brought through incision and anchored preparatory to permanent colostomy. My plan was to remove rectum in about six days, through a posterior incision.

May 23rd—Patient showed evidence of peritoneal infection. Left colon opened with electric cautery; little function from either colostomy. Good drainage from rectum. Murphy drip instituted through left colostomy. Patient died rather suddenly at 5:00 o'clock next morning.

Post-mortem denied. My belief is that there was a leakage from the extra-peritonealized portion of the gut through the sutured diaphragm of peritoneum, in a patient who had a low phagocytic, leucocytic activity, with resulting peritonitis. Cause of death: Cancer of the rectum; general peritonitis.

Dr. L. J. Moorman. *Chronic Pancarditis with Decompensation.*

Master J. M., age 14. Patient entered hospital complaining of shortness of breath with orthopnea. Two weeks prior to entrance he developed a severe cold, with fever and painful shoulder joints. History of having had, at six years old, acute rheumatic fever with heart involvement. Since then has had two or three attacks of rheumatic fever. Suffered from cardiac embarrassment in 1916.

Physical Examination: A poorly nourished boy. His heart was of the corbovinum type. A roughened systolic murmur heard best over apex, and a definite diastolic "waterfall." "Pistol shot" and Duroziaz sign present in groin. Blood pressure 130-30. A definite capillary pulse seen both in the finger nails and lips. No edema of legs. Temperature, on entrance, was 101 F., and remained elevated until two weeks previous to death. Blood count normal; repeated blood cultures showed no septicemia.

With rest in bed the painful joints and dyspnea soon cleared up. On account of high temperature it was thought he had chronic endocarditis. Kept in bed for ten weeks. From the beginning of the course digitalis was administered. After being free from high temperature for a week he was permitted to walk about the hospital. Just previous to his terminal break, he walked four blocks, following which he developed orthopnea, rapid pulse, and elevated temperature. Died four days later.

Clinically, the case was one of an acute exacerbation of a chronic endocarditis, mitral and aortic regurgitation with chronic myocarditis. Necropsy was of no special interest, except for condition of heart: Chronic endocarditis with definite mitral and aortic valve lesions; pericarditis; passive congestion of all the viscera.

Dr. L. J. Moorman. *Pulmonary Tuberculosis. Tubercular Enterocolitis. Tubercular Peritonitis.*

Miss C. C., Mexican, age 15. Patient entered hospital complaining of pain in abdomen, of nine months duration. Six months ago was operated (laparotomy), nature of which is not known. Since that time has had fever with cough and expectoration, and diarrhea.

Past History: Difficult to obtain.

Physical examination: Poorly nourished girl. Rales heard throughout upper half both lungs. Right rectus scar. Many small irregular indurated masses palpated in various parts of abdomen. Moderate tenderness over entire abdomen. Pulse 100. Temperature 101 F. W. B. C. 10,000 with 72 polys. No tubercle bacilli found in sputum. X-ray showed evidence of advanced pulmonary tuberculosis, and marked hypermotility of the intestine.

Diagnosis: Pulmonary tuberculosis, tubercular enterocolitis, and tubercular peritonitis.

Patient gradually grew worse and died May 4th, 1920.

Post-Mortem Findings: 1. Chronic pulmonary tuberculosis, with pleurisy and cavity formation in both apices. 2. Miliary tubercular peritonitis. 3. Tubercular ulceration of ilium, caecum, and colon, with perforation. 4. Miliary tuberculosis of liver. 5. Vegetative valvular endocarditis.

Dr. Lea A. Riely. *Chronic Interstitial Nephritis.*

Mrs. C. E. W., white, age 38. Patient entered hospital May 23rd, complaining of weakness.

Present Illness: Well until one year ago. Had influenza at that time. Lost fifteen pounds weight; shortness of breath and edema of feet; precardial pain.

Past History: Negative.

Physical Examination: Negative except for soft, mitral regurgitant murmur, and harsh breath sounds; edema of feet and ankles with "pitting on pressure."

Laboratory Findings: Urine—albumen in moderate amount; no casts. Chlorid output showed decreased function. Phenolsulphonephthalein test negative. Blood: sugar, 0.104 per cent; urea nitrogen 375 mgm. per 100 cc.; hemaglobin 45 per cent; R. B. C. 2,090,000; W. B. C. 10,500, with 81 polys.

Progress: Upon entering patient was moribund; died seven days later after an acute rise in temperature.

Post-Mortem Findings: 1. Cicatricial tissue and healed tuberculosis of lungs. 2. Acute splenitis. 3. Marked hypoplasia of left kidney; hypoplasia of right kidney, with senile nephritis.

CASE REPORTS.

Dr. John W. Riley. *Mixed Tumor of the Parotid and Salivary Glands.*

Case No. 1. Master H. R., white, age 8. Family History: Negative. Previous history: Well until three months previous to seeking attention. Small swelling on right side of face, which increased in size slowly. Physical examination: well nourished boy. Lemon-sized, painless, hard, lobulated, moveable tumor in right parotid region. Operation: removal of a firm encapsulated, whitish-blue tumor, having the consistency of cheese. Microscopical diagnosis: small round cell sarcoma. Wound healed promptly; was treated with x-ray. Boy died a year later from metastases.

Case No. 2. Mrs. B., white, age 37. Family and personal history: negative. Twelve years ago patient noticed a pea-sized tumor below left ear. Gradually increased to size of an unshucked walnut. Caused no pain; was firm, lobulated, moveable, and not attached to overlying skin. Operation: removal of tumor under local anesthesia. Tumor was encapsulated, irregular, firm, bluish-white, with great blood supply. Microscopical diagnosis: teratoma.

These tumors have been studied and described by Billroth, Von Brunz, Kernig, Kaufman, Kelly, Woods, Judd, Hertzler, and others. All are not entirely agreed on the origin and classification of them, but more recent observers consider them as mixed tumors, as it is very difficult to classify them.

They appear as rather hard, lobulated, usually moveable growths, most frequently seen just below the lobule of the ear. They may not be connected with the parotid and at other times they form in the gland itself. They are also found in the submaxillary gland, although most commonly seen in the parotid.

They are found as often in men as in women and equally common in the right and left side. They are most commonly seen in the second decade. They have been observed to have been present as long as sixty years and as short a time as a month. The average length of time is about eight years.

Usually they occur as a single tumor but multiple tumors have been seen. Although occasionally seen growing in the salivary gland, they are usually found separate from it and surrounded by a distinct capsule.

One observer reports that thirty per cent return after removal. It has generally been found that if the tumor is removed without rupture of its capsule it does not return and that the removal of the lymph nodes is not necessary.

Cases have been reported in which the capsule was ruptured during the extirpation of the gland growth and the tumor cells left or scattered in the wound have quickly returned and assumed quite malignant propensities. These tumors usually produce but few symptoms and are diagnosed from their position, firmness and bossilation and slow growth.

The capsule is usually quite thick and the tumor on section is firm, bluish-white and intermingled with bands of fibrous tissue. Removal of the encapsulated ones without lymph node dissection has been very satisfactory. This need not entail destruction of the facial nerve. In the larger, more infiltrating kind it is necessary to sacrifice the nerve and gland.

DISCUSSION.

Dr. Horace Reed: This is a most excellect report. I have had occasion to look up literature on this subject, and find that nothing new has been written recently. The concensus of opinion is that the Conheim theory of tumor formation holds good for this type of tumor. It is a mistake to classify it as one tumor, as so many different types of cells may be found present. Some are malignant, others are not, but eventually the capsule is broken. So it behooves the surgeon to remove the growth early. Often it is difficult to remove, especially under local anesthesia; and sometimes it is necessary to sacrifice the facial nerve.

Dr. R. M. Howard: I observed Dr. Riley in removing the tumor in the last mentioned case, and was especially impressed by his manner of avoiding the gland and facial nerve. I believe that local anesthesia is a measure of protection against damage to the nerve.

TYPHOID CARRIERS.

Referring to Circular 69, issued by the Chief Surgeon of the American Expeditionary Forces, in February, 1919, giving evidence of an increase of typhoid and paratyphoid fever among the overseas troops, E. H. Schorer (Kansas City), Hoboken, N. J. (*Journal A. M. A.*, Sept. 6, 1919), presents a report of examinations of returning soldiers made to determine how many chronic carriers there might be among them. The methods used are described, and the laboratory seems to have been especially adapted for the search, as an intensive survey for intestinal parasites was already being conducted there by Major Kofoid. Of all the strains from the stools of 1,000 men, including members of practically all divisions isolated at the same time to reduce the percentage error, only two gave sufficiently definite reactions to warrant their identification as true pathogens. One culture proved to be *Bacillus dysenteriae* of the Hiss-Russel-Y type, while the other was *B. dysenteriae* of the Flexner type. Neither of the men had been suffering from bacillary dysentery. In addition to the two strains mentioned, twenty-eight strains of nonlactose fermenters were isolated which gave carbohydrate fermentations, characteristic of the types sought, but which agglutinated with their respective serums in dilution of 1:100, and, at most, at 1:500. "Since the serums used were of high titer (*B. typhosus* serum 1:32,000, *B. paratyphosus* A and B serums 1:16,000, and *B. dysenteriae*, serum 1:4,000) and because repeated subcultivating on agar failed to increase the agglutinability of these strains, these organisms were finally classed as intermediates. Eleven other strains, which on preliminary tests fermented only glucose and mannite with gas, and agglutinated with the paratyphoid serums in dilutions of 1:100 and 1:500, later fermented lactose after prolonged incubation. These were undoubtedly slow colons. Their detection emphasizes the necessity of long incubation (two weeks) of the lactose serum water and litmus milk cultures, and also of carrying out agglutination tests in higher dilutions, before making any final bacteriologic diagnosis." If time had permitted the use of cultures on brilliant green agar, more isolations might have been made, no doubt. The method used was deemed sufficient in a great majority of cases, and the results showed that the infections in the American Expeditionary Forces during the autumn and early winter of 1918 had remained limited and had given rise to no aftermath of carriers.

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Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent th's Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

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Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

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EDITORIAL

RULES AND REGULATIONS AFFECTING PHYSICIANS AND OTHERS RELATIVE TO VENEREAL DISEASES.

The State Commissioner of Health on July 1, 1920, after careful consideration with, and aid from, the Attorney General, promulgated regulations binding on patients, physicians, and every other person concerned in the treatment of venereal infections. Full text of the regulations will be found in this issue.

The Venereal Disease Control Law of Oklahoma, certainly a sane measure, entitled to the support of every good citizen, strange to say, has been more honored by complete ignoring, half hearted, not in good faith co-operation from the physician, the person of all persons in position to interpret and vitalize its terms better than any other. As many laws are; the Act empowers the Commissioner of Health and others to make regulations, too intricate and impracticable for inclusion in the law itself, for proper enforcement. These regulations, violation of the terms of, is equivalent to violation of the law; are not unreasonable or inconvenient to the doctor; stamped postal blanks are furnished him gratis, which contain information called for; the system, no doubt, has already proved a help to physicians in keeping check of their work, formerly wholly neglected or poorly kept. Reports are made of cases by number, the physician only retaining the name, which of course is confidential information obtained by reason of his relations.

Physicians should be warned now that disregard of these rules will surely be followed by trouble and legal reckoning. Evasion is nearly impossible and if occasionally successful, reflects no credit on the physician in that attitude. The work of the Venereal Disease Control Officer, Dr. J. C. Mahr, has been very favorably noted and commented upon by technical Journals of National importance on many occasions; it certainly seems that Oklahoma physicians should not be found projecting embarrassment to the highest efficiency

attainable from the law. If they must do that, however, this is to warn them to get ready for trouble, for no exceptions will be made by any of those concerned in prosecutions hereafter. The "standing" of no one will bar enforcement, on the contrary their obstinacy will net their complacent vanity a rude shock. Moral —Report your venereal cases.

ARE WE TO HAVE ANOTHER FRIEDMANN?

For several months past the daily press has carried news items of an alleged "discovery" by one Voronoff, a Russian physician, as to the wonderful revivifying effects upon the human of transplantation of ovarian and testicular glands, with occasional allusion attributing such virtues to transplantation of "monkey glands." The entire matter being regarded as something new, and crediting the Russian with its perfection and practical application to relief of many of the phenomena of old age and impotency for other reasons. The *New York Tribune* of July 19th, announces the arrival of Voronoff, and his statements that he came to carry the operation "a step further by using human glands instead of glands of the ape"; that he hoped to demonstrate "this wonderful *new* operation before representatives of the Academy of Medicine."

American Medicine has never witnessed more brazen effrontery than is shown in the manouvres of this "scientist" and "discoverer," and the pitiable part of the whole performance lies in the ready and credulous acceptance of his mere assertion by a great daily paper, which publishes the matter as authentic, when a few minutes use of the telephone to any one of scores of New York's profession would disclose that his "improvement" became a matter of American Medical record and achievement many years ago; that the medical press had long ago recorded it, and that its originator, Dr. G. Frank Lydston, Chicago, had reported many cases, the first operation being performed by and upon himself, which was followed by many other carefully selected, accurately noted cases of both sexes, and that later he issued a volume to the profession on the subject.

The writer had the pleasure of meeting Dr. Lydston and hearing him discuss the phases of the work when it was in its initiatory stages; so there can be no question as to whom priority and credit is due. Certainly there is nothing new in the claims of Voronoff, and if he has any scientific standing and training he must know of the work of Lydston, widely published in America and translated into several French medical publications.

Surely the great press of our country should have some informed medical authority on its staff or accessible for consultation in such matters. The immense harm already done by too credulous acceptance of obvious and heartless imposters, unwittingly aided by our press, is yet a matter of fresh history. Hearst's "Cancer Cure" by Bebee's Serum; the gullibility of all of them as to Friedmann; the long forgotten heralding of the medical Messiah, Lorenz, with his cure of joint tuberculosis, should be labelled "Medical," filed in every editorial office, and when anything medical is broached the musty past should be brought out as a reminder of the pitfalls awaiting the enthusiastic writer ready to sow broadcast destruction to victims of disease.

THE DEMISE OF KING ALCOHOL.

The value of alcohol as a food has always been a questionable matter, predominant opinion of scientists qualified to pass upon the matter denying such properties, with those claiming such attributes, generally holding that more useful substitutes were available when alcohol was indicated. In the days of dying gasp, physicians naturally have been appealed to as the last resort. Undeniably some of them have gone far afield, standing as biased partizans rather than useful counsel.

Physicians, more than any other profession, have noted the destructive path left by the juice of joy. Sympathetic of the Constitutional right of the citizen to live as he pleases, only restricted when his course interferes with the health, pleasures and pursuits of others; we suddenly see a nation "Constitutionally" sweep manufacture and sale out of legal existence. Summing up the small questionable good alcohol may do the sick, the indictment of crime, poverty, disease, and wrecked homes far overbalances the eleventh hour claim of its necessity. Our good friend and harbinger of temporary surcease from the worries of the hour seems to have reached the pale of nevermore. Most of us are glad of it; the discerning physician, often a user himself, has no regret when he computes the woe left in its wake. We never had sympathy or anything in common with the low-idealed citizen behind the bar, or with the higher-up who prostituted manhood and used his powers to control the political destinies of good citizens and the towns and cities they created. That attitude, more than any other, brought about National downfall of the great King. Not content with attending to their own affairs, refusing to maintain places of decency, encouraging every vice and brazenly using their filthy horde to gain and misuse public office at the expense of the better element, the physician only sees cause for congratulation. The record of abuses, especially in large centers, is appalling. Histories of corrupt management of state institutions for relief and care of the insane and similar unfortunates, reveal unbelievable atrocities and neglect from the hands of those charged to care for them by ignorantly criminal political employees, placed there not by selection of decent people, but by the "Boss" who acquired his power through the agency of alcohol.

Every physician south of Mason's and Dixon's Line smiles when he reads the efforts of New Jersey, New York and Pennsylvania officials to invoke the doctrine of "State's Rights." We can see nothing but inconsistency in their cry of such rights when we recall their stand of 1861-64. Brother in distress, we are mean and ungenerous enough to feel no answering sympathy for you. You established the principle of National over States rights, so you must abide by the creature of your making.

HAVE A HEART, MUCKRAKER.

Oklahoma papers recently carried sensational news, duly accompanied by glaring headlines, that Wesley Hospital, Oklahoma City, was charged with poorly housing and otherwise maltreating ill and wounded returned soldiers assigned them for treatment by the U. S. Public Health Service. As expected by those of the medical profession informed of the staff personnel of Wesley, the investigation wholly exonerated the men and institution.

We have already called attention in the *Journal* to certain phases of the work of caring for the returned soldier, little, if at all understood by the people generally, and likewise unappreciated by the doctor unless he is brought into contact with the actual work. In the first place, no one has abused or is trying to maltreat the men. If any class of the physician's work is done well, with painstaking care, and for very nominal remuneration, it is this work. To the initiated it is a matter of no surprise now to understand that an amazingly large per cent of the men are subject to various, complex nervous and psychic phenomena. With this in mind, fair-minded men hesitate to accept the stories they hear except after authentic knowledge. It is no reflection on the men, on the contrary it is to their advantage to have everyone understand that their complaints are often made on misunderstanding and inability to grasp the rules applied to their cases. It follows that their friends, unaware of such tendencies and possibilities, accept at full value, the most absurd charges against capable men, who are giving them the best of service, largely from patriotic and keen sympathy for them. Knowing this to be true, it is more than exasperating to be haled into the light of publicity to answer groundless charges brought by misinformed busy-bodies, who, you may be sure, cannot be reached for reparation only in part of the injustice they have done honorable

men. It is exasperating, too, to know that no exoneration will ever be given the wide publicity given the unjust charges against the hospital caring for these men, which institution pridefully and honorably may proclaim to all comers, especially to irresponsible critics, that every member of its staff held commission in some capacity as an officer of the Medical Corps, did their bit and did it well, honorably returned to pick up the thread of civil life with its obligations which they are so well fitted to execute.

The *Journal* has this suggestion to make. Physicians everywhere should reduce to the minimum these charges of the muckraker; our press should know from us that members of an honorable profession could have no motive or make no gain in inefficiently doing their work. We should ask them to at least give us credit for not being fools enough to wreck our superstructure of ability on which is based the only certain success. The physician who stands mutely by when such nonsense is told him, voicing no protest in defense of the colleague he must know is wrongfully assailed, sadly lacks that necessary pride he should, but does not hold for the world's most ancient and honorable calling. To the irresponsible, should be pointed the months of 1917-1919 with the roll-call of Wesley's honorably absent membership.

PERSONAL AND GENERAL NEWS

Dr. H. A. Wagner, Shawnee, is on his vacation in Colorado.

Dr. M. A. Baker, Shawnee, attended the x-ray clinics held in Chicago during July.

Dr. W. E. Dicken and family, Oklahoma City, are touring Colorado by automobile.

Dr. and Mrs. E. F. Hurlbert, Meeker, are spending the summer at Castle Rock, Colo.

Dr. Earl D. McBride, Oklahoma City, returned in July from an extended trip to clinics of eastern cities.

Dr. J. B. Lampton, Henderson, Ky., has moved to Sapulpa and formed a partnership with Dr. Amos Avery.

Dr. W. S. Ivy, Marlow, is doing special work in Chicago. He is attending the Laboratory of Surgical Technique.

Dr. J. W. Malcolm, Lawton, suffered a broken leg when he was run down by an automobile in the streets of that city.

Dr. H. M. Reeder, Shawnee, is doing special work in pathology in Chicago. His plans contemplate absence for two months.

Tulsa City authorities are considering the purchase of the Knoblock-Woods Laboratory as an adjunct to the Health Department.

Dr. and Mrs. E. C. Wilson, Alva, entertained the doctors and doctors' wives of Woods County with a banquet at their home June 29th.

Dr. G. W. Stewart, Hobart, announces that he may locate in Muskogee, the home of his son, who is Superintendent of the State School for the Blind.

Mrs. Edna A. Gipson, 2910 Classen Blvd., Oklahoma City, is offering for sale medical books scale and other effects of her deceased husband, Dr. H H. Gipson.

Dr. E. H. Martin, Hot Springs, announces the organization of the Martin Clinic. Drs. Purdum, Klugh, Coffey, Porter, Minnich, Edgerton, Ford and Runskewitz are his associates.

Dr. J. M. Byrum, Shawnee, Secretary of the State Board of Medical Examiners, will attend the clinics of Dr. Willard Bartlett, St. Louis, and Crile in Cleveland while away on his vacation.

Dr. C. V. Rice, Muskogee, is given much credit for the work he performs in conducting the Baby Clinic maintained by the Associated Charities. Their Bulletin of July especially commending him.

Dr. L. E. Emanuel, Chickasha, was elected President; Dr. W. T. Ray, Gould, Vice-president, and J. M. Byrum, Shawnee (re-elected), Secretary of the State Board of Medica Examiners at the July meeting

Dr. I. W. Hollingsworth, Muskogee, is visiting Mexico City for the purpose of securing, if possible, oil concessions. It is said he formerly served with many of the officers now prominent in affairs, recently swept into power by the revolution.

Dr. J. T. Martin, City Physician of Oklahoma City, states that the report that he had severed his connection with the health department is without foundation in fact, quite in keeping with the misinformation too often doled out to the public.

Mrs. Billie Twoney, Oklahoma City, nurse on duty at the Detention Hospital, took "a coupla" pistol shots at a demented patient who ran amuck—result, two clear misses. The women simply have not had the vote long enough to make them efficient with the six-shooter.

Governor Robertson, on request of Dr. A. R. Lewis, Commissioner of Health, announces that special medical requirements of the inmates of the Sulphur State School for deaf children will be available from the contingent fund. They will be treated at the University Hospital, Oklahoma City.

Dr. G. A. Boyle, Enid, has shaken the dust of Oklahoma from his feet and at this hot hour is seducing the "speckled beauties" from trout streams of Southern Wyoming. He will visit relatives in Twin Falls, Idaho, then go on to Los Angeles, Long Beach and then home via Arizona the last of September.

Dr. Amos Avery, Sapulpa, was awarded a verdict in a malpractice suit recently decided in that city. The plaintiff dismissed the case and paid the costs. Suit arose over Dr Avery attempting to collect fee for his services. This is the most common of all causes as a basis for alleged malpractice, also the most unjust.

Dr. W. D. Dawson, Henryetta, has evoluted from the class of strugglers to that of affluent ease. A short time ago, he bought a farm, oil development reached him and now he is the possessor of five producing wells, which came in with 350-barrel output. The piece still has ten locations to be drilled in. We congratulate him upon now being in position to aid struggling medical editors and similar worthy souls.

Dr J. M. Lee, Tulsa, after trial by the State Board of Medical Examiners at Oklahoma City was deprived of his license to practice. The charges are said to have been based upon "unprofessional" advertising, in that he claimed to perform manifestly improbable cures, or obtain such results. He appealed the case to the District Court, Muskogee, the home of a member of the Board, which is required by law when injunction or mandamus is brought against the acts of the Board.

Shortage of Oklahoma nurses is reported by Miss Elizabeth McKnight, Red Cross Nursing Director, St. Louis, who visited the State in July seeking suitable recruits for U. S. Public Health Service.

The Third Annual Oklahoma State Public Health Conference will take place at Oklahoma City October 12-13, 1920. The conference is under the joint direction of the Oklahoma Tuberculosis Association and the State Department of Public Health. For information concerning program apply to either organization.

A Great Discovery—Trachoma Definitely Located in Mediastinal Space. Oklahoma is nothing if not progressive. The gods of yesterday are the discarded idols today, making way for inevitable onrush of progress. The *Journal*, page 249, July, quotes Dr. Ray Balyeat, Oklahoma City, on having made x-ray of chest with the astounding statement, "We found the *trachoma* covered over". Gray, Gerrish, Quine, adieux, your sun has set; in Oklahoma City a restless scientist has been your undoing. With the aid of an accurate reporter wonders may be accomplished, especially so if the proof-reading is entrusted to the proper individual. We apologize.

The Vinita Journal facetiously apologizes for inadvertantly mentioning the name of a physician in its news columns, relating the episode of the printer's error who added "w" to the letters "so" in noting that Dr. Blank had visited the son of a prominent citizen. That is not half bad, but does not approach the plight of the editor, who found on his return that his "Devil", fond of Kipling, had inadvertantly added to the account of the wedding of the town's rich man, the lines:

"And this is the end of my story,
Told as the twilight fails,
While the monkeys are walking together,
A-holding each other's tails."

MISCELLANEOUS

REVISED RULES AND REGULATIONS, VENEREAL DISEASE REPORTS.

Published by the Oklahoma State Commissioner of Health, on the First Day of July, 1920.

To prevent the spread of contagious and infectious diseases among persons within the State, to establish a quarantine in aid thereof, and for the cure of such diseases designated by these rules and regulations.

It being necessary to protect the health of the citizens of the State of Oklahoma, and being urged as an emergency measure by the Surgeon General of the United States Army and of the United States Public Health Service, the following rules and regulations are hereby published by the Oklahoma State Commissioner of Health, pursuant to and under authority of Chapter 67, Revised Laws of 1910, to take effect from and after August 25, 1918.

Section 1: Syphilis, gonococcus infection and chancroid, hereinafter designated venereal diseases, have been declared by law to be contagious, infectious, communicable and dangerous to the public health. (Session Laws 1919, Senate Bill No. 43.)

Section 2: The provisions of Chapter 67, Revised Laws of 1910, shall apply to the diseases mentioned, except that these diseases shall be reported by serial number on forms provided by the State

Commissioner of Health for such purpose, and the name of the patient need not be reported, except as hereinafter provided.

Section 3: Any person who is under treatment at the present time, or who shall, hereafter, present himself (or herself) to any licensed physician for treatment or diagnosis of any of the venereal diseases mentioned, shall immediately, in case he or she is found or reasonably believed to be so infected, be reported to the State Board of Health on Form V S. 30. Each physician is required and hereby directed to keep a record of all patients infected with the diseases mentioned, with their corresponding serial numbers and the resident addresses of such patients. The number used in notifying the first case by each physician or person reporting shall be No. 1, the second No. 2, etc., seriatim; except it be a case formerly treated by another physician or person, when the letter A shall be prefixed to the case number.

Section 4: All city, county, or other health officers shall use every available means to ascertain the existence of, and to investigate all cases of syphilis, gonorrhea and chancroid within their several territorial jurisdictions, and to ascertain the sources of such infections. Local health officers are hereby empowered and directed to make such examinations of persons reasonably suspected of having syphilis, gonorrhea or chancroid as may be necessary for carrying out the provisions of the Venereal Disease Act, Session Laws, 1919, known as Senate Bill No. 43.

Section 5: Local health officers are authorized and directed to quarantine persons who have, or are reasonably suspected of having syphilis, gonorrhea or chancroid, whenever, in the opinion of said local officer, or the State Board of Health, or the Director of the Bureau of Venereal Diseases, or its executive officer, quarantine is necessary for the protection of the public health. In establishing quarantine the local health officer shall designate and define the limits of the area in which the person known to have, or reasonably suspected of having syphilis, gonorrhea, or chancroid and his immediate attendant, are to be quarantined and no person, other than the attending physician, shall enter or leave the area of quarantine without the permission of the local health officer. No one but the local health officer shall terminate said quarantine, and this shall not be done until the quarantined person has become non-infectious, as determined by the local health officer or his authorized deputy through clinical examination and all necessary laboratory tests, or until permission has been given him to do so by the State Board of Health or its executive officer. A case of gonococcus infection is to be regarded as infectious until at least two successive smears taken not less than 48 hours apart fail to show gonococci, said examination to be made by a bacteriologist approved by the State Board of Health. A case of syphilis shall be regarded as infectious until all lesions of the skin and mucous membranes are healed. A case of chancroid shallfbe regarded as infectious until all lesions are healed.

Section 6: Prostitution is hereby declared to be a prolific source of syphilis, gonorrhea and chancroid, and the repression of prostitution is declared to be a public health measure. All local and state health officers are therefore directed to co-operate with proper officials, whose duty it is to enforce laws directed against prostitution, and otherwise to use every proper means for the repression of prostitution.

Section 7: When a case is reported by number only, the physician or person treating the disease shall assume responsibility for the faithful observance of all rules and necessary precautions by the patient, and the responsibility shall continue until the patient appears to be cured, at which time a report to this effect is to be transmitted to the State Board of Health, such report to contain the serial number of identification under which the case was originally reported. When reasonable evidence is secured to indicate that said rules and precautions are not being observed, or will not be observed, the name and address of the patient shall at once be submitted to the local health officer, who shall then proceed as directed under Section 5.

Section 8: When a person applies to a physician or other person for treatment of a venereal disease, it shall be the duty of the physician or person consulted to inquire of and ascertain from the person seeking treatment whether such person has theretofore consulted with or been treated by any other physician or person, and if so, to ascertain the name and address of the physician or person last consulted. It shall be the duty of the applicant for treatment to furnish this information and refusal to do so or falsely stating the name and address of such physician or person consulted, shall be deemed a violation of this regulation. It shall be the duty of the physician or person whom the applicant seeks to and does consult or employ, to notify immediately the physician or person last consulted or employed of the change of advisors, such notification to be made upon a form (form V. S. 33) furnished for that purpose by the State Board of Health. Should the physician or person previously consulted fail to receive such notice within seven days after the last appearance of such venereally diseased patient, it shall be the duty of such physician or person to report to the State Board of Health the name and address of such venereally diseased patient, (form V. S. 32).

Section 9: Any person, or persons applying to any physician or to any Public Health Service Clinic for treatment of a venereal disease, and who shall give an alias, or wrong address, or any misstatement as required under the rules and regulations of the State Board of Health, shall be deemed guilty of a misdemeanor.

Section 10: The parents or guardians of minors acquiring venereal diseases and living with said parents or guardians, shall, when notified, be legally responsible for the compliance of such minors with the requirements of these regulations.

Section 11: Persons who have been under treatment for syphilis in an active form shall not be considered cured until all clinical evidences of the disease have been absent for nine months, during which time three negative Wassermann reactions shall have been secured; the second test being made at least two weeks after the first and the third test at least ten days after the second. Persons with

gonococcus infections shall not be considered cured until all clinical evidences have disappeared and until three negative bacteriological examinations have been secured; the second test at least ten days after the first and the third test at least ten days after the second. Persons infected with chancroid shall not be considered cured until the ulcer has entirely healed and until a negative Wassermann, made not less than six weeks after the healing of the sore, has been secured. Any person under treatment for a venereal disease, *who discontinues treatment before he or she is certified as cured is guilty of a misdemeanor.*

Section 12: It is hereby ordered that all persons arrested for vagrancy, prostitution, adultery, or any violation of any law of the State or a municipality thereof, involving sexual morality, shall submit to and be given a thorough examination for venereal disease by the local health officer. If the person arrested be found infected, he (or she) shall at once be required to take treatment and shall be quarantined as hereinbefore provided, to such extent as may be necessary for the protection of the public from infection.

Section 13: All information and reports concerning persons infected with venereal diseases, shall be inaccessible to the public except in so far as publicity may attend the performance of the duties imposed by these regulations and by the laws of the State.

Section 14: It *shall* be the duty of all *licensed physicians* treating venereal diseases to comply with Section 3 of the foregoing Rules and Regulations (reporting all cases to the State Board of Health), complying strictly therewith in accordance with all laws governing and empowering the State Commissioner of Health to enforce such Rules and Regulations as may be promulgated.

July 1st, 1920. A. R. LEWIS. State Commissioner of Health.

SIX AMERICAN RED CROSS NURSES WIN WORLD'S HIGHEST NURSING HONOR.

Six American women, all of whom saw service in the World War, have just been awarded the Florence Nightingale Medal, the highest decoration of the whole nursing world. The distinction, which is bestowed by the International Committee of the Red Cross, Geneva, may be awarded only one nurse of any nation annually—thus these six women represent America's nursing roll of honor since the outbreak of war in 1914. The terms under which the decoration was created in 1912 also provide that it be granted "only to trained nurses who may have especially distinguished themselves by great and exceptional devotion to the sick and wounded in peace or war."

These nurses, all of whom served with the American Red Cross, are Miss Helen Scott Hay, of Washington, D. C.; Miss Florence Merriam Johnson, of New York City; Miss Martha M. Russell, of Boulder, Colo.; Miss Linda K. Meirs, of Boston; Miss Alma E. Foerster, of Chicago; and Miss Mary E. Gladwin, of New York City.

SCHOOL FOR THE BLIND.

Two new buildings provided by the last legislature at the Oklahoma School for the Blind are nearing completion. These buildings increase the capacity of the Institution so that it will be possible to receive additional pupils at the opening, about September 15th. Anyone having a child or knowing of a child who is either totally or partially blind, and who, because of defective vision is unable to receive an education in the public schools, should write Superintendent O. W. Stewart, Muskogee, Oklahoma, for information relative to the Institution.

MALARIA CONTROL.

The establishment of malaria control centers in Malvern, Lake Village, Fordyce, Crossett, and perhaps other towns in Arkansas with control units in such towns appointed by the State Board of Health, is a matter for congratulation. Wonderful work has been done at Crossett, so much so that the *Literary Digest*, a publication read all over the United States, has called attention to that enterprising city as a model by which other cities everywhere should pattern. Indeed, it is said that the work in the vicinity has been so thorough that a reward has been offered to anyone discovering a mosquito there. In years gone by, with people in other states Arkansas has been almost a synonym for malaria. Of course, this was undeserved, because at all times malaria was largely confined to the low, marshy sections and did not obtain in the higher grounds. But against this reputation comes an influential journal, read chiefly, if not exclusively, by thoughtful people, with a most decided "boost" for Arkansas as exemplified by Crossett.

Arkansas has developed rapidly and is still developing; but outside capital and desirable immigration are still essential to its further development. The desirable immigrant and capitalist look first to health statistics. The immigrant will not bring his family to a community where health conditions are not satisfactory, nor will the capitalist invest his money in such communities. This is a point of view with which our legislators have not been fully impressed. On the contrary, the State Health Department has, in the past, been sadly handicapped by a lack of appreciation by the Legislature of the supreme importance of public health measures.

Far be it from us to discourage road building—indeed, that is to some extent a health measure; but disposing of the quagmires and unsanitary pools by roadsides, affording ideal breeding spots for mosquitoes, is vastly more important. It is in order to call attention to the vast road building projects, considered of such vital interest that special sessions are called to perfect and correct imperfect road building measures, while the public health has been imperiled by insufficient appropriations. As a matter of fact, health legislation is paramount to all other measures, and the demonstrated results

at Crossett and elsewhere in the State may finally impress the Legislatures of the future with the real importance of health legislation and liberal appropriations for sanitation and conservation.—*Arkansas Med. Journal*, June, 1920.

"THE CASCARA HOUSE."

The knowledge gained by many years of persistent study of the development and improvement of medicinal preparations derived from a vegetable drug is bound to command respect. To Parke, Davis & Co., the medical profession owes the introduction of Rhamnus Purshiana almost half a century ago. By intensive application to methods of extraction and preparation this firm has ever since maintained the efficiency and pharmaceutical elegance of its cascara products. The appellation "The Cascara House," as applied to Parke, Davis & Co., is singularly appropriate.

ANTI-MALARIA CAMPAIGN IN SOUTH GEORGIA.

For many years malaria has caused a loss of six million dollars, and, among the negroes alone, a loss of over a million and a half working days each year in South Georgia. It infects from twenty to one hundred per cent of the people in the communities, and caused the death of 800 people yearly.

Recently the American Red Cross, in co-operation with the State Board of Health, the Georgia Association, the U. S. Public Health Service, and several large corporations, has undertaken an extensive anti-malaria campaign. Moving pictures, lectures and the press have all been utilized in calling the attention of the people to the importance of destroying the mosquito and all its breeding places.

The campaign has already been very successful. Three teams that went out early in April visited more than twenty counties during that month, giving from three to five "shows" in the rural sections. One team reached 4300 people, and the others were similarly successful. The cities were avoided in favor of the rural districts where both the need and the interest were greatest. Hundreds of people drove to the school houses from fifteen to twenty miles around, and one old lady who had never seen a moving picture before was brought lying down in an automobile.

The report of one of the teams shows that Fort Gaines, Ga., has agreed to raise $2,500 to stamp out malaria, and will get a public health officer; that Randolph County has applied for a Public Health Nurse and will ask the grand jury to recommend the Ellis health law and the appointment of a public health officer; that Terrell county will get a sanitary engineer to stamp out malaria; that Thomas county is raising $5,000.00 to show the outlying districts what can be done; that Colquitt county is asking for a Public Health Nurse; that in Moultrie the chamber of commerce will ask the city council for an appropriation to fight malaria; that in Lee County, Smithville and Leesburg will issue $6,500.00 in bonds to fight malaria; that in all of these counties, and others visited, the people have been educated and aroused.

THE DESIRABLE PRACTITIONER.

A desirable practitioner ought to be aware also that the particularity of his calling requires of him a higher standard of ethics. A physician who is ethically not higher than the average man is ethically lower than the average man. I shall offer two reasons for this dictum. The activities of the ordinary man are in most cases susceptible to supervision by his fellow men. The greatest part of the activities of the practitioner, however, are not accessible to outside control. Such an office of trust requires a higher standard of morals. Then there is the fact that the physician deals with situations which very frequently have tragic elements of distress in them. In disasters humanity asks for altruism, the legal laws of selfishness are suspended you are asked why you saved your life in preference to that of a woman or a child, strangers to you.—*Med. Review of Reviews*, June.

A DIMINISHING PROFESSION.

The American Red Cross sees in the widening disparity between the increase of our population, and the decrease in the number of graduates from medical institutions, an added reason for promoting general training in first aid and accident prevention.

The present standard of pre-medical education has lengthened the time and increased the cost of medical training, thus curtailing to a large extent the yearly attendance at the medical colleges. In 1904, there were 28,142 students attending the various medical colleges of the United States, this being the largest number in any year during the period 1880-1919. The total number of medical students in the schools for the year ending June, 1919, excluding pre-medical, special and post-graduate students, was 13,052. There was a decrease in 1919 of 578 below that of 1918.

The high standard of efficiency established through the reclassification of medical colleges has caused the closing of many of the smaller and more poorly equipped ones. In 1906 there were 162 medical colleges in the United States; in 1919 there were only eighty-five recognized medical colleges. In 1903 there were 5,698 graduates from all medical colleges, one graduate for every 14,020 of population. This number has gradually declined, in spite of the increase in population, until, in 1919, there were only 2,656 graduates a decrease of fourteen below that of 1918—one graduate for each 40,230 people.

The longer hours and smaller remuneration of country practice have caused many physicians to move from the rural districts to the larger towns, where conditions are less difficult and remuneration

greater. Many practitioners, desiring to specialize also, are attracted to the cities from the rural districts.

That the high standard of medical education must be maintained goes without saying, if we are to render efficient service to those suffering with disease. Nevertheless the shortage of practitioners has caused increased suffering in certain localities which is very severely felt. Those who reside in the sparsely settled areas are left to the care of untrained assistance and serious illness or loss of life often results. Numerous illnesses and injuries occur which, when improperly treated or if treatment is too long delayed, may prove fatal.

Universal first aid training would supplement the work of the physicians, take from them the burden of caring for unimportant injuries. To release their services for more serious cases, and would also place the victims of accidents in the physicians' hands in the best possible condition for future recovery.

FILARIAL PERIODICITY.

K. M. Lynch, Charleston, S. C. (*Journal A. M. A.*, Sept, 6, 1919), takes up the phenomenon of the disappearance during certain portions of the day of filaria in the blood, as in the case of *F. bancrofti*, which disappears during the hours of sleep, and *F. loa*, during the hours of activity. Until Smith and Rivas developed the acetic acid concentration method of counting the number of microfiliarae in a given amount of blood, "filarial periodicity" signified the periodic appearance and disappearance of these organisms in the peripheral blood. Smith and Rivas have been able to show, by the acid concentration method of counting, that filaria embryos are to be found in the peripheral blood at all times of the day and night, and that the periodicity is a matter of the relative number thus circulating, and have been led to form a new theory in explaining the phenomenon. They found that the period of greatest prevalence of *F. Bancrofti* is from midnight to 8 a. m., while the period of cutaneous prevalence of *F. loa* is from 8 a. m. to 4 p. m., the maximum being about noon. Regarding these periods as those respectively of (*a*) greatest peripheral relaxation from a condition of fatigue, in sound sleep, (*b*) of recovery from fatigue and resumption of peripheral capillary tone, and (*c*) of capillary constriction from the combined influences of tone and of compression from muscular activities, and believing that both filariae are restricted in their motility by their ensheathment, Smith and Rivas advance a theory in which the mechanics of the capillary circulation plays the main part. In brief, the theory is that each kind of parasite is in smallest numbers when it has the easiest progress through the relaxed capillaries, because there are therefore less of them found in the same quantity of blood. Supporting this mechanical theory they have performed experiments aiming at altering circulatory conditions and capillary caliber. Lynch has also experimented on two species of filaria, using nitroglycerin as a dilator and epinephrin and pituitary extract to constrict the capillary circulation. Experiments during sleep were also made. His conclusions are given substantially as follows: The administration of nitroglycerin is followed by a decrease in the number of filariae during both periods of prevalence and of paucity, while epinephrin or pituitary extract has the reverse effect. In a collapsed lung, with which experiments were also conducted, the *F. immitis* accumulated in enormous numbers, and its period of cutaneous prevalence was directly connected with sleep. The venous drainage of a part contains fewer filariae than the capillaries; there are still fewer when accumulation in the capillaries is produced by vascular stimulation, and following this capillary accumulation the venous drainage contains larger numbers.

CANCER OF CERVIX: ITS TREATMENT.

Robert M. Lewis, Baltimore (*Journal A. M. A.*, April 24, 1920), reports a case of constant bleeding from the uterus for one and one-half years. The patient was unable to tell whether she had menstrual periods or not, as the flow of blood was so continuous and free. There was no loss of weight and no pain or discomfort anywhere. There were no local symptoms referable to the bladder or rectum and no indigestion or cough. The general physical, as well as the other routine examinations revealed nothing to contraindicate operation. The abdominal examination was entirely negative. No glands were palpable in the inguinal regions. Pelvic examination revealed a moderately relaxed outlet. The cervix was small and firm; from the external os a small bud of bleeding granular tissue protruded. This was removed with forceps for microscopic examination. A frozen section cut within a few minutes of its removal showed that this was squamous cell carcinoma. The body of the uterus was in good position, normal in size and shape, and freely movable. The ovaries were normal. The broad ligaments were not infiltrated. Lewis performed an abdominal panhysterectomy in June, 1916, the parametrium and paracervical tissues being removed widely. No enlarged glands were found. Convalescence was uneventful and the patient has remained well to this day. Lewis believes that the ideal treatment of these patients is first to treat the condition in the early stages thoroughly with radium, and then to perform the usual wide panhysterectomy. He believes that the results will not be so good if the procedure is reversed.

FRENZIED FOOLISHNESS.

Quick Thinking Young M. D.

An elderly examiner was putting a young medical student through his tests.

"Supposing," he began, "there was a gunpowder explosion and a man was blown into the air. You, as the nearest doctor, being called in, what would you do?"

"Wait for him to come down again," was the prompt reply.

"Well, let us take another case. A man has dug a pit forty feet deep. At the top he slips and falls right to the bottom again. What would you advise?"

"Fill up the pit, and save funeral expenses," answered the student, glibly.

The examiner snorted angrily, and then barked:

"If I was to raise my foot and give you a kick, what muscles would be called into play?"

With a steely light in his eyes, the young man retorted:

"The flexor and extensor muscles of my right arm.!"

Jim—"Too bad about Smith. He's suffering from a bad case of shell shock, and he cannot remember anything of the past."

Jerry—"Good Lord! And I lent him five dollars before he was hurt."

Doctor—"What? Troubled with sleeplessness? Eat something before going to bed."

Patient—"Why, Doctor, you once told me never to eat anything before going to bed."

Doctor (with dignity)—"Pooh, pooh! That was last January. Science has made enormous strides in the last few months."

Specialist—"You are suffering from nerve exhaustion. I can cure you for the small sum of $2,000."

Patient—"And will my nerve be as good as yours then?"

Patron—"Can you tell me what ails my wife?"
Doctor—"She does not take enough outdoor exercise."
Patron—"She doesn't feel like it."
Doctor—"True, she needs toning up."
Patron—"What do you prescribe?"
Doctor—"A new hat."

Many.

There are people who, instead of listening to what is being said to them, are listening already to what they are going to say.—*Impressions.*

His Skill Appraised.

Dauber, being hard up, took one of the pictures to a pawnbroker to raise a loan on it. He was offered the flattering sum of four dollars.

"Four dollars!" expostulated the artist. "Why the frame cost me more than that."

"I know," said the pawnbroker; "that's what I'm lending the four dollars on."—*Boston Transcript.*

Doctor—"Here I bring with me the oldest man in our city. He is over eighty and his occupation is chimney sweep.

Professor—"Nothing wonderful about him. We all know that smoked meat keeps longer than any other."

"Mayme's baby, to hear her talk, must be the smartest child on the block."

"Yes, I was fully prepared to hear her say, when her child swallowed a tack, it was because he heard the doctor say he needed more iron in his system."

"They say my cousin is a wonderful doctor."

"You bet he is. I swallowed a nickel the other day, and he made me cough up two dollars."

"And so you are going to the hospital for an operation, are you, Mr. P.?"

Mr. P. (sighing deeply)—"Yes, they say I have to."

Visitor—"And what is the trouble for which you are to be operated on?"

Mr. P.—"Well, it may be appendicitis, or it may be a gall-stone, or it may be floating kidney, so the doctor says, but I think it is a case of professional uncertainty."

Visitor (in a tone of astonishment)—"Well, that is a new one on me. I have never heard of such a disease."

Mr. P.—"Then your acquaintance with doctors must be limited."

"I have a case of tuberculosis, in the last stage, and would like to know if you think your Proteogen No. 3 would do a case of that kind any good. If so, please send me the treatment and directions how to use."

His request was of course, complied with, and on January 16, 1920, this letter was received from the doctor:

"The patient who is taking the Proteogen No. 3 is my brother. He has gained seven pounds within the past four weeks and has continued his work as a railroad postal clerk. He does not cough more than from ordinary cold, has a good appetitie and seems to be getting along all right."

My Auto, 'Tis of Thee.

My auto, 'tis of thee, short cut to poverty,
Of thee I chant.
I blew a pile of dough on you two years ago, and now you refuse to go,
Or won't or can't.

Through town and countryside, you were my joy and pride,
A happy day.
I love thy gaudy hue, the nice white tires so new. But now you're down and through,
In every way.

To thee, old rattletrap, came many bumps and knocks,
For thee I grieve.
Badly thy top is torn, frayed are thy seats and worn, a whooping affects thy horn,
I do believe.

Thy motor has the grip, thy spark plug has the pip,
And woe is thine.
I, too, have suffered chills, ague and kindred ills, endeavoring to pay thy bills,
Since thou wert mine.—*Hood Arrow.*

An Unsatisfactory Diagnosis.

Doctor—"There is nothing the matter with you, madam."
Lady—"Nothing the matter with me! Marie, cough for the doctor like I coughed in the night."
—*Klod Hans, Copenhagen.*

A Reasonable Request.

Please keep away from Elland cemetery during dispute.—*Halifax Courier.*

An elderly church warden, in shaving himself one Sunday before church-time, made a slight cut with the razor on the extreme end of his nose.

Quickly calling his wife, he asked her if she had any court plaster in the house. "You will find some in my sewing basket," she said. The warden soon had the cut covered.

At the church, in assisting with the collection, he noticed everyone smile as he passed the plate. Very much annoyed, he asked a friend if there was anything wrong with his appearance.

"Well, I should say there is," was the answer. "What is that on your nose?"

"Court plaster."

"No," said his friend, "it is the label off a spool of cotton. It says. 'Warranted 200 yards long,' "

By Force and Arms.

Lawyer—"You say your wife attacked you with a death'dealing weapon. What was it?"
Meek Little Man.—"A fly swatter, sir."—*American Legion Weekly.*

The arrival of "the daughter of a rich Southern planter" in Great Bend for a summer visit caused quite a ripple in social circles, according to the *Tribune*, and the ripple still rippled when it was learned she was the daughter of an enterprising undertaker in Atlanta.

What To Do For It.

London—"If you eat anchovies, pickles, olives and other salty things before going to bed you will dream that you are drinking all night."

So says William Archer, the well known critic. He adds:

"I commend this practice to the citizens of the United States if prohibition has left them with a grievance.—*Cleveland Plain Dealer.*

A New Definition.

"What is a widow?" asked the teacher of a Sunday school class, the subject of the day's lesson being the widow of Ham.

There was silence until she nodded to a little boy on her left, and said: "You know what a widow is, don't you?" for she knew that the little boy's mother was one.

"Yes'm," he answered, "it's a lady what takes in washing!"

COUNCIL ON PHARMACY AND CHEMISTRY
AMERICAN MEDICAL ASSOCIATION

(The following articles produced by advertisers in this Journal have been accepted for inclusion with New and Non-Official Remedies by the Council on Pharmacy and Chemistry.)

During June, the following articles manufactured by our advertisers have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Abbott Laboratories: Benzyl Benzoate (Abbott); Elixir Benzyl Benzoate (Abbott); Tablets Benzyl Benzoate (Abbott).

PROPAGANDA FOR REFORM.

Chaulmoogra Preparations and Sodium Morrhuate. Chaulmoogra oil and preparations made from it are at present extensively employed and seem to produce amelioratoin in the majority of lepers to whom it has been administered persistently. Investigation has shown that chaulmoogra oil contains bactericidal substances that are one hundred times more active than phenol, and that this bactericidal action is specific for the acid fast group of bacteria to which the causative organism of leprosy belongs. The product is inactive against all other organisms studies. On the other hand, it has been shown that sodium morrhuate and the fatty acids of cod liver oil do not have a similar action in tuberculosis which is also due to an acid fast bacterium. The value of chaulmoogra preparations in tuberculosis remains to be demonstrated, and their clinical trial should await their experimental investigation. The indiscriminate use of drugs in tuberculosis may arouse false hopes and may not be without danger to the patient (Jour. A. M. A., June 5, 1920, p. 1578).

Warning Against Untried Medicaments. The United States Public Health Service has issued a circular regarding the use of arsenic preparations in the treatment of syphilis, in which it invites attention to the extensive exploitation of various arsenic preparations which are not related to the arsphenamin group. It is held that the subcutaneous, intramuscular or intravenous use of arsenic in the treatment of syphilis should be confined to the arsphenamin group, as these agents are now of established value and are produced under the supervision of the Public Health Service (Jour. A. M. A., June 12, 1920, p. 1654).

What is the Therapeutic Value of the Hypophosphites? A research conducted by the Council on Pharmacy and Chemistry shows: There is no reliable evidence that they exert a physiologic effect. It has not been demonstrated that they influence any pathologic process. They are not foods. If they are of any use, that use has not been discovered. The hypophosphites were introduced into medicine by Churchill, who advanced the theory, long since discarded, that the so-called tuberculosis diathesis was due to a phosphorus deficiency. It is now known that little phosphorus, if any, is assimilated from hypophosphites—far less than from phosphorus compounds of ordinary foods. As a result of the power of advertising, many physicians still prescribe hypophosphite combination (Jour. A. M. A., June 12, 1920, p. 1661).

More Misbranded Nostrums. The following "patent" medicines have been the subject of prosecution by the federal authorities, chiefly because the therapeutic claims made for them were false: Sealeaf Emulsion, an emulsion of cod liver oil and malt extract; Green Mountain Herb Tea, and Sabine's Indian Vegetable Tea, consisting essentially of senna, fennel, elder flowers, anise, triticum, sassafras, American saffron, coriander, licorice root, butternut bark, buckthorn and Epsom salt; Sabine's Indian vegetable Cough Balsam, consisting essentially of alcohol, chloroform, tar, resin, sugar and traces of alkaloids; Bovinina, apparently a meat extract; Fruit-a-tives, consisting essentially of extracts of aloes, nux vomica and cinchona bark; Anticalculina Ebrey, consisting essentially of alcohol, colchicin, ammonium salts, vegetable extractives and water; McDowell Ginseng Bitters, a solution of plant extract, containing small quantities of glycerin and a zinc salt (Jour. A. M. A., June 12, 1920, p. 1661).

Quality of Acetylsalicylic Acid. The following brands of acetylsalicylic acid have been found of satisfactory quality and are in New and Nonofficial Remedies: Acetylsalicylic Acid-Heyden, Acetylsalicylic Acid-M. C. W., Acetylsalicylic Acid-Merck, Acetylcalicylic Acid (Aspirin)-Monsanto, Acetylsalicylic Acid-P. W. R., Acetylsalicylic Acid-Squibb, and Aspirin-L. and F. An examination made in the A. M. A. Chemical Laboratory two years ago showed that the product supplied as acetylsalicylic acid was of equal quality with the German made Aspirin Bayer. The Aspirin Bayer now made in America and exploited with misleading claims is controlled by the Sterling Products Company, which sells cascarets, danderine, etc. (Jour. A. M. A., June 12, 1920, p. 1664).

Formitol Tablets. In a report of the Council on Pharmacy and Chemistry, it was stated that Formitol Tablets of the E. L. Patch Company contained formaldehyd (or paraformaldehyd) and some hexamethylenamin, and that the formaldehyd (or paraformaldehyd) had been produced by the decomposition of the hexamethylenamin originally present in the tablets. The Council now reports that the Patch Company declares that no hexamethylenamin is used in the manufacture and that, therefore, that which was found must have been produced from the formaldehyd and ammonium chlorid in the tablets. The Council further reports that a printed sheet received from the Patch Company conveyed the information that Formitol Tablets contained ammonium chlorid, benzoic acid, citric acid, guaiac, hyoscyamus, menthol, paraformaldehyd and tannic acid, but gave no information as to the amounts

of any of the ingredients except that each tablet was declared to represent 10 minims of a one per cent formaldehyd solution. Because of the non-quantitative, and, therefore, meaningless "formula," the A. M. A. Chemical Laboratory made an analysis of the tablets. The analysis indicated that the combined weight of all the claimed active ingredients is less than one grain per tablet! Formitol Tables furnish a good illustration of some well established truths: (1) "Formulas" that are nonquantitative are valueless or worse than valueless. (2) The fact that a manufacturer puts certain drugs in a mixture is no proof that these drugs are there when the mixture reaches the patient. (3) Complex mixtures should be avoided. It is absurd to expect, as is claimed in the case of Formitol Tablets, anodyne, antiseptic, astringent, expectorant and resolvent action, all at the same time (Jour. A. M. A., June 19, 1920, p. 1730).

Formula for Mouth Wash. Castile soap, dried and granulated, 6.00 gm.; benzosulphinid, 0.20 gm.; basic fuchsin, 0.002 gm.; oil of cassia, 0.50 c.c.; oil of peppermint, 0.50 c.c.; oil of cloves, 1.00 c.c.; alcohol, 75 c.c.; water to make 100 c.c. A few drops added to water to be used as a mouth wash. It will be noted that, except for the volatile oils present, antiseptics are conspicuous by their absence. It is impossible to disinfect the mouth. Mere bacteriostatic (germ growth) inhibitive influence of antiseptics can be of value only as long as the agent is present; and the time that one is willing to keep the mouth full of fluid is limited. The chief virtue of mouth wash preparations lies in their esthetic qualities. their pleasant appearance, odor and taste, which induces their use (Jour. A. M. A., June 19, 1920, p. 1732).

NEW BOOKS

Under this heading books received by the Journal will be acknowledged. Publishers are advised that this shall constitute return for such publications as they may submit. Obviously all publications sent us cannot be given space for review, but from time to time books received, of possible interest to Oklahoma physicians, will be reviewed.

HEALTH INSURANCE AND PHYSICIANS.

By Frederick R. Green, A. M., M. D., Secretary, Council on Health and Public Instruction American Medical Association. Issued by The Council, Press of the American Medical Association, Chicago.

This monograph is the production of perhaps the ablest student of matters affecting the medical profession in our country. Dr. Green, apt student, peculiarly fitted to weigh cause and effect, is an accurate interpreter of the trend of the day. He has concisely discarded the chaff of the biased argument and illogical opinions on this subject which is now a difficult problem in many localities with dense population, and which, sooner or later will be our problem, in some of its varied forms. The medical profession is so vitally affected in every proposed law that it at once becomes our problem.

Salient features of Dr. Green's conclusions are: That it is not insurance, but a subsidy; that it is an economic problem, the concern of all the people, but vitally of the physician, without which it cannot be; that our profession is ineffective mostly in the matter for the reason we only consider the medical aspects involved, neglecting the important economic angles. He denies the very generally repeated claim that it is "inevitable," therefore must be; doubts if it is applicable in present form to Democratic United States; questions if it is needed, finally summing up with opinion that it must be proved:

First: That there is a disproportionate amount of sickness among employed persons, causing loss, incapacity, and poverty greater than that of the average person.

Second: That financial burden on the laborer due to sickness is more than he can bear.

Third: That present methods of promoting public health and disease control are inadequate.

Fourth: That compulsory, state supervised sickness insurance is the best remedy for the condition.

Until these basic facts are proved he believes there can be no effective action.

Physicians should know of and appreciate the injurious effects of studying our own phase of the matter, neglecting the broad economics involved, and the disastrous results of holding aloof from active work in solving the problem. Citing England and its acts, he says that in formulating this most important concern of the physician, impossible of execution without his co-operation, Lloyd George consulted employer, employe, fraternal societies; every possible interest, without the slightest consultation or advice from the doctor. This product of Dr. Green's studies should be obtained and carefully studied by every physician in our country, its facts laid away to the day when it may be our great concern

THE SURGICAL CLINICS OF CHICAGO.

The Surgical Clinics of Chicago. Volume IV., Number III (June, 1920). Octavo of 204 pages 79 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-Monthly Price per year; Paper $12.00; Cloth $16.00 net.

This issue contains clinics on "Empyema," by Allen B. Kanavel; "Metastatic Prostatic Abscess,' commoner than is generally thought. by Herman L. Kretschmer; "Perforated Gastric Ulcer," by David C. Straus; "Repair of the Common Bile Duct," by Arthur Dean Bevan; "Intussusception," by Alfred A. Strauss; "Tuberculosis of a Hernial Sac, With a Brief Consideration of Abdominal Tuberculosis in

General," by Daniel Eisendrath; "Persistent Mastoid Fistula After Simple Mastoid Exenteration," by George L. Shambaugh; "Acute Appendicitis and Gall-Stones," by Edward Louis Moorhead. There are many other valuable subjects by these clinicians and other subjects which limited space prohibits noting.

AMERICAN ILLUSTRATED MEDICAL DICTIONARY (DORLAND)

A new and complete dictionary of terms used in medicine, surgery, dentistry, pharmacy, chemistry, veterinary science, nursing, biology and kindred branches; with new and elaborate tables. Tenth edition, revised and enlarged. Edited by W. A. Newman Dorland, M. D. Large octavo of 1201 pages with 331 illustrations, 119 in colors. Containing over 2,000 new terms. Philadelphia and London: W. B. Saunders Company, 1919. Flexible leather, $6.00 net; thumb index, $6.50 net.

You'll find in it Dorland is apt, timely and fitting. This edition is newer by a year than any other medical dictionary and contains hundreds of new words not to be found in any other work. All dictionaries are good, in constant demand by the busy, thorough student and physician, but Dorland has for years held a high appreciation of its merits in the minds of the medical connoisseur, until today it has no rival for wide value and practical worth. Arrangement of tables, clear cuts, marshalling of every possible bit of medical information in biref, but accurate and accessible form makes it a welcome prize in any library. The great war produced many useful innovations and words; Dorland has garnered all and included it in the new edition. The Author calls special attention to the historical aspect of medical terms, announcing that this feature is the product of America's ablest medical historian, Dr. Fielding H. Garrison, Principal Assistant Librarian's Office, of Surgeon General, Washington. Wherever necessary, terms of such origin are amplified with additional description in parenthesis.

The physician may be assured of the intrinsic worth in every detail of the work.

SIMPLIFIED INFANT FEEDING.

Simplified Infant Feeding, by Roger H. Dennett, B. S. M. D.; J. B. Lippincott Company, Philadelphia and London.

This book has two things that at once must appeal to the reader. First, the lack of padding. Bring written by a physician for the use of physicians he assumes, and rightly so, that the most of us at least know that the esophagus empties into the stomach and that we have a general idea where the stomach is located. Also that most physiologies give rather a good description of the process of digestion. Second, the writer does not wander from his text, "Simplified Infant Feeding," and gives what we believe to be the best array of *facts* that has up to this time been presented for our consideration and education on this complex subject.—C. W. H.

CARE AND FEEDING OF SOUTHERN BABIES.

Care and Feeding of Southern Babies, by O. H. Wilson, M. D. Published by Baird-Ward Printing Co., Nashville, Tenn.

We quite agree with the author that some excuse is necessary for adding another book of this kind to the long, long list. The author offers as his excuse that his treatise relates directly to the care of southern babies. Just why the care of southern babies should differ from other babies, be they from the north or east, or even from Oklahoma, we do not know, and after reading the book we do not find that it differs in any of the methods employed by other writers on the same subject. In one instance the remark is used that a few weeks after birth the baby begins to kick. Our babies do not wait a few weeks before kicking, they kick at once. In another instance the writer recommends that the best bed for the baby during the first weeks is a bassinet, or a clothes basket properly lined. The best bed for a baby at all times is a bed, not a substitute. Also the change from long to short garments should never happen, they should be short from the beginning, the reason therefor being obvious. On page 34, the writer advises the use of an opiate—paregoric. This we believe to be a dangerous suggestion to be contained in a book that is especially written for the use of the laity.

We fully agree with the author that the work is repetitious.—C. W. H.